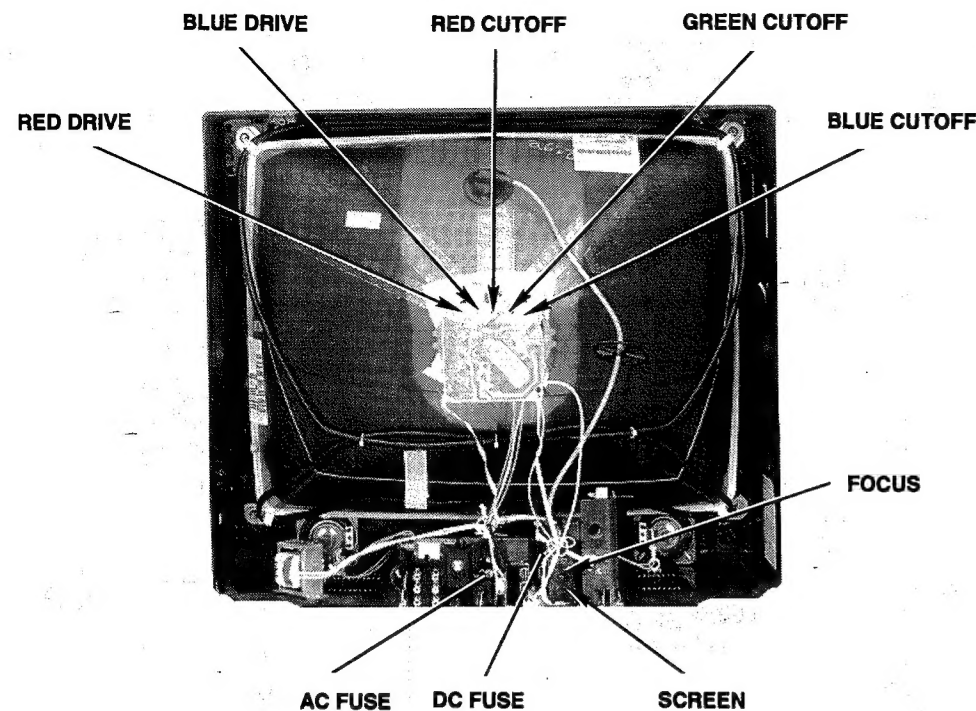


CABINET - REAR VIEW



TEST JIG HOOKUP

Function	Chek-A-Color Adapter No.	PC Board Plug	Pin	Color
CRT	B239	# DY	1	Red
Yoke	D482		3	Blue
Yoke Setting	YP1		4	Yellow
Comments	Focus Tap		5	Black

The listing of any available replacement part herein in no case constitutes a recommendation, warranty, or guarantee by Howard W. Sams & Company as to the quality and suitability of such replacement part. The numbers of the listed parts have been compiled from information furnished to Howard W. Sams & Company by the manufacturers of the specific type of replacement part listed.

Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein.

©1992 by Howard W. Sams & Company
2647 Waterfront Parkway East Drive, Suite 300
Indianapolis, IN 46214-2012

Printed in the United States of America 5 4 3 2 1



92SC02257



PHOTOFACT® Technical Service Data

SET 3043

MODEL CS-2010R

MITSUBISHI

INDEX

Convergence Adjustments 1

GridTrace Location Guide

 CRT Board 5

 Main Board 4

IC Functions 4

Important Parts Information 6

Miscellaneous Adjustments 1

Parts List

 TV 5, 6

Photos

 Cabinet-Rear View 1

 CRT Board 5

 CRT Neck Assembly 1

 Main Board 4, 5

Quick-Checks Troubleshooting

 CRT Board 5

 Main Board 5

Placement Chart 3

Safety Precautions 1

Schematics

 Audio 3

 Comb Filter/Video Switching ... 2

 CRT 2

 Power Supply 2

 Systems Control 3

 Television 2

Stereo Adjustments 1

Terminal Guides and Notes 4

Test Equipment 3

Test Jig Hookup 1

Troubleshooting 1

Tuner Terminal Guide 1

Tuner Voltage Chart 1

MITSUBISHI
Model CS-2010R



Complete coverage
for servicing a television receiver...

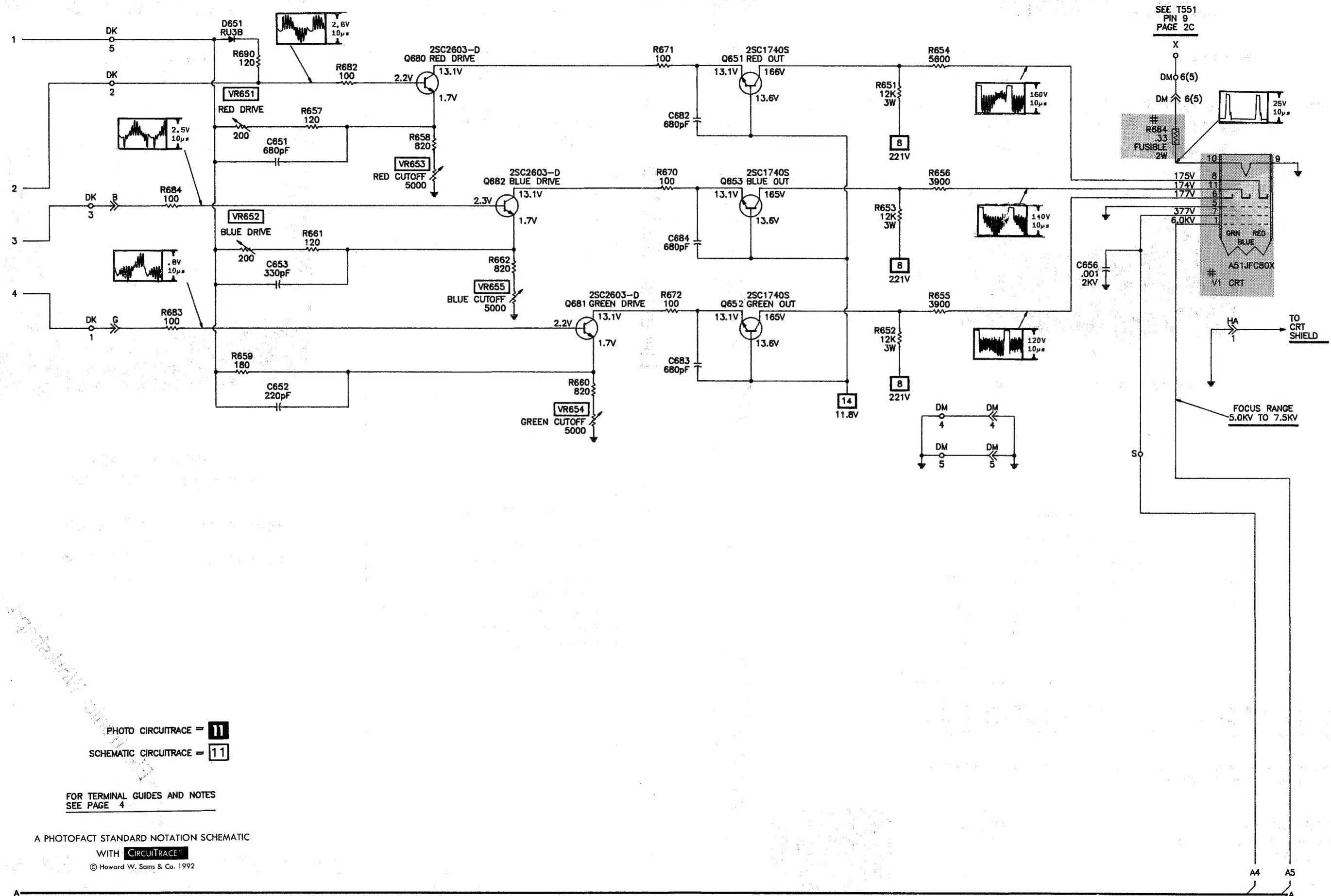
- Schematics
- Component locations
- Parts lists
- Troubleshooting guide



HOWARD W. SAMS & COMPANY

SEPTEMBER 1992 SET 3043

CRT SCHEMATIC



mitsubishi

MODEL CS-2010R

MISCELLANEOUS ADJUSTMENTS

PRETUNING

Note: All procedures require an antenna connected and power applied to the set.

Auto Memory

1. Press the mode button until "Auto Program" is displayed on screen.
2. Press the adjust left or adjust right button to select TV or CATV.
3. Press the enter button, available channels are scanned and stored into memory.

Add Channel

1. Press the mode button until "Channel Memory" appears on screen.
2. Select channel. Use direct channel access buttons.
3. Press the enter button to add channel.
4. Repeat steps two and three to add additional channels.
5. Press mode button to end process.

Delete Channel

1. Press the mode button until "Channel Memory" appears on screen.
2. Select channel. Use direct channel access buttons.
3. Press the cancel button to erase channel.
4. Repeat steps two and three to erase other channels.
5. Press the mode button to end process.

Note: This set employs digital customer controls. Adjust all settings to midrange unless otherwise indicated. To adjust controls, press video button S709 or audio button S710 to select desired control. Press adjust up S707 or adjust down S708 to change control setting. Remote transmitter may be used.

B+ VOLTAGE CHECK

Tune in a picture. Connect a digital voltmeter to TP951E (IC951 pin E), low side to TP951G (IC951 pin G). With line voltage at 120VAC, B+ should read 130V +/- 1V.

HIGH VOLTAGE CHECK

Connect a high voltage probe to CRT anode. Tune in a picture. Set brightness, color, and contrast to minimum. High voltage should read 26.0KV to 29.0KV. High voltage should never exceed 29.0KV.

RF AGC

Tune in a picture. Adjust RF AGC control VR100 counterclockwise until snow appears in picture. Then adjust clockwise until snow just disappears.

SUB CONTRAST

Tune in a picture. Set brightness, contrast, and color to minimum. Adjust sub contrast control VR201 for visible highlights.

CHARACTER POSITION

Tune in a picture. Press "Disp" button on remote transmitter. Adjust OSC control VR701 to center display on screen.

COLOR PURITY

Caution: Some sets employ a CRT with neck assembly permanently bonded. Do not attempt to remove these assemblies.

Operate receiver for at least 15 minutes. Use a degaussing coil to demagnetize the CRT and mounting hardware. Set color, contrast, red cutoff control VR653, and blue cutoff control VR655 to minimum. Set brightness and green cutoff control VR654 to produce visible green raster. Loosen the deflection yoke clamp screw and remove rubber wedges. Slide deflection yoke L491 forward to produce a vertical green band. Adjust the purity tabs to center green band on the screen. Slide deflection yoke back until a uniform green screen is obtained. Replace the rubber wedges. Tighten deflection yoke clamp screw. Check red and blue purity.

COLOR TEMPERATURE

Tune in a crosshatch pattern. Set brightness, contrast, color, red cutoff control VR653, green cutoff control VR654, blue cutoff control VR655, and screen control to minimum. Set red drive control VR651, and blue drive control VR652 to midrange. Slowly advance screen control until crosshatch is just visible. Note color of pattern and adjust the other cutoff controls for a white pattern. Set brightness, and contrast to maximum. Adjust the blue and red drive controls for best black and white picture. Check tracking at low and high brightness. If necessary, readjust controls for best white balance.

CONVERGENCE

Caution: Some sets employ a CRT with neck assembly permanently bonded. Do not attempt to remove these assemblies.

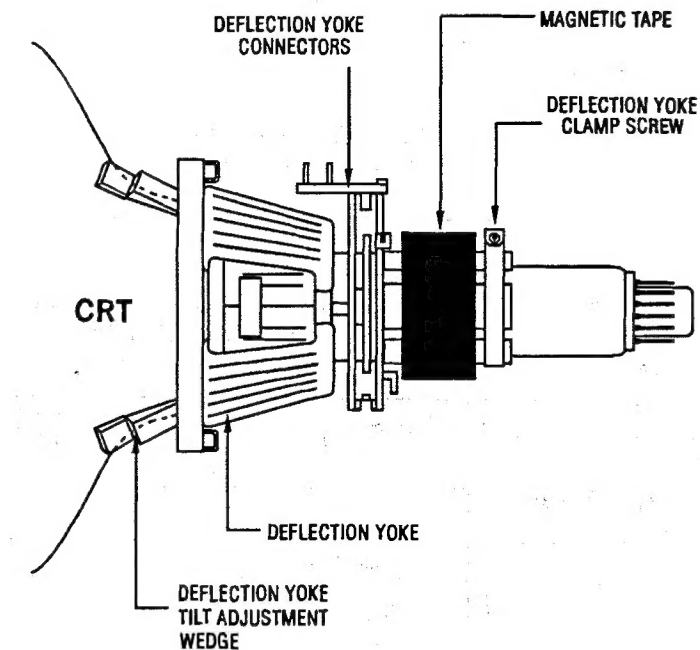
Operate receiver for 15 minutes. Tune in a dot pattern. Adjust 4 pole magnets to converge the red and blue dots at the center of the screen. Loosen the magnet locking ring. Adjust the 6 pole magnets to converge the red/blue dots over the green dots. Note: Rotate the tabs of each set of magnets equally and opposite to converge vertically and rotate the tabs of each set of magnets equally and in the same direction to converge horizontally. 4 and 6 pole magnets interact,

MISCELLANEOUS ADJUSTMENTS continued

magnet locking ring. Tune in a crosshatch pattern. Loosen the deflection yoke clamp screw. Remove the rubber wedges. Tilt deflection yoke up or down to converge the vertical lines at the top and bottom of the screen and the horizontal lines at the left and right

of the screen. Tilt the deflection yoke left and right to converge the horizontal lines at the top and bottom of the screen and the vertical lines at the left and right side of the screen. Replace rubber wedges and tighten the deflection yoke clamp screw.

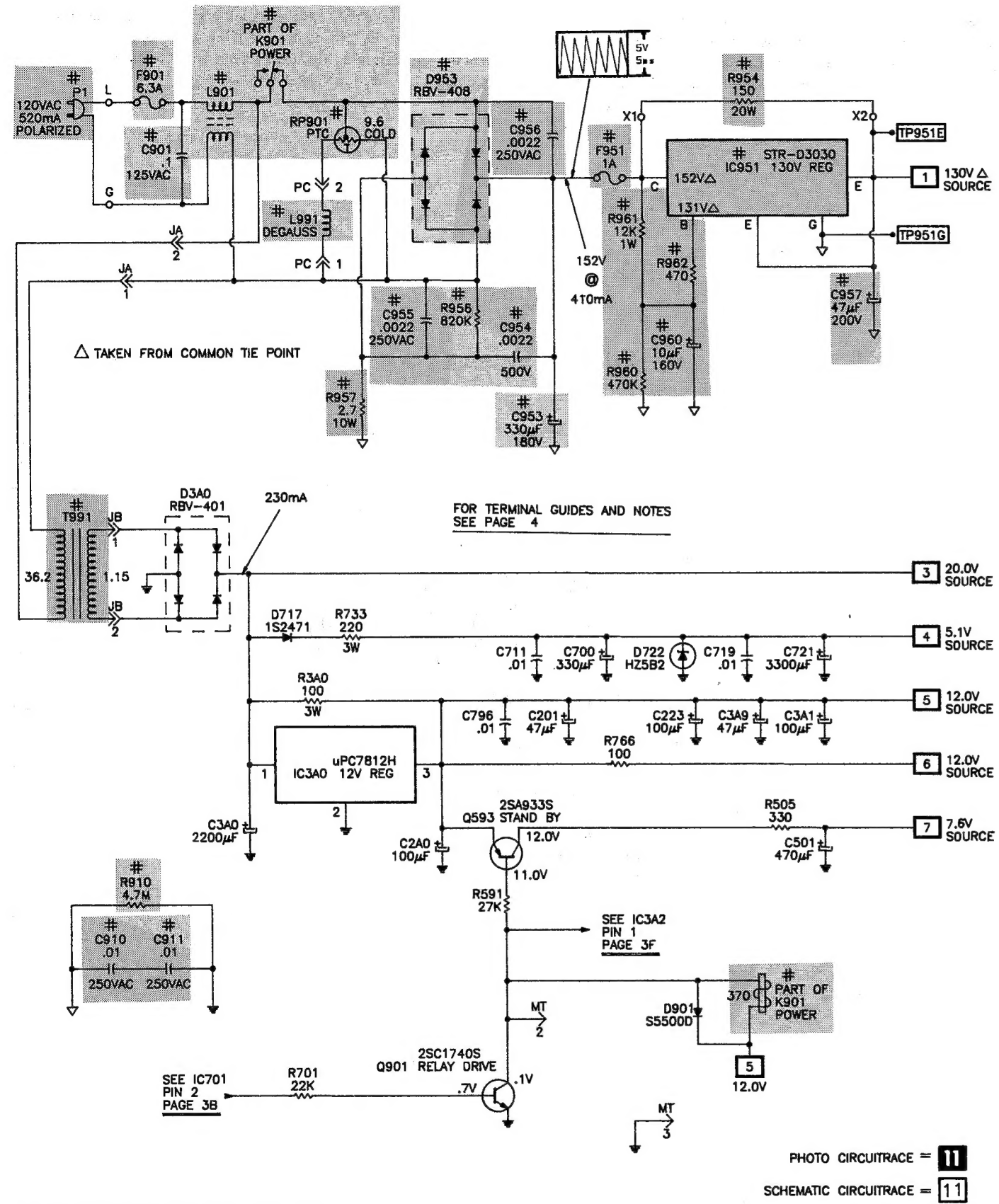
CRT NECK ASSEMBLY



MITSUBISHI

MODEL CS-2010R

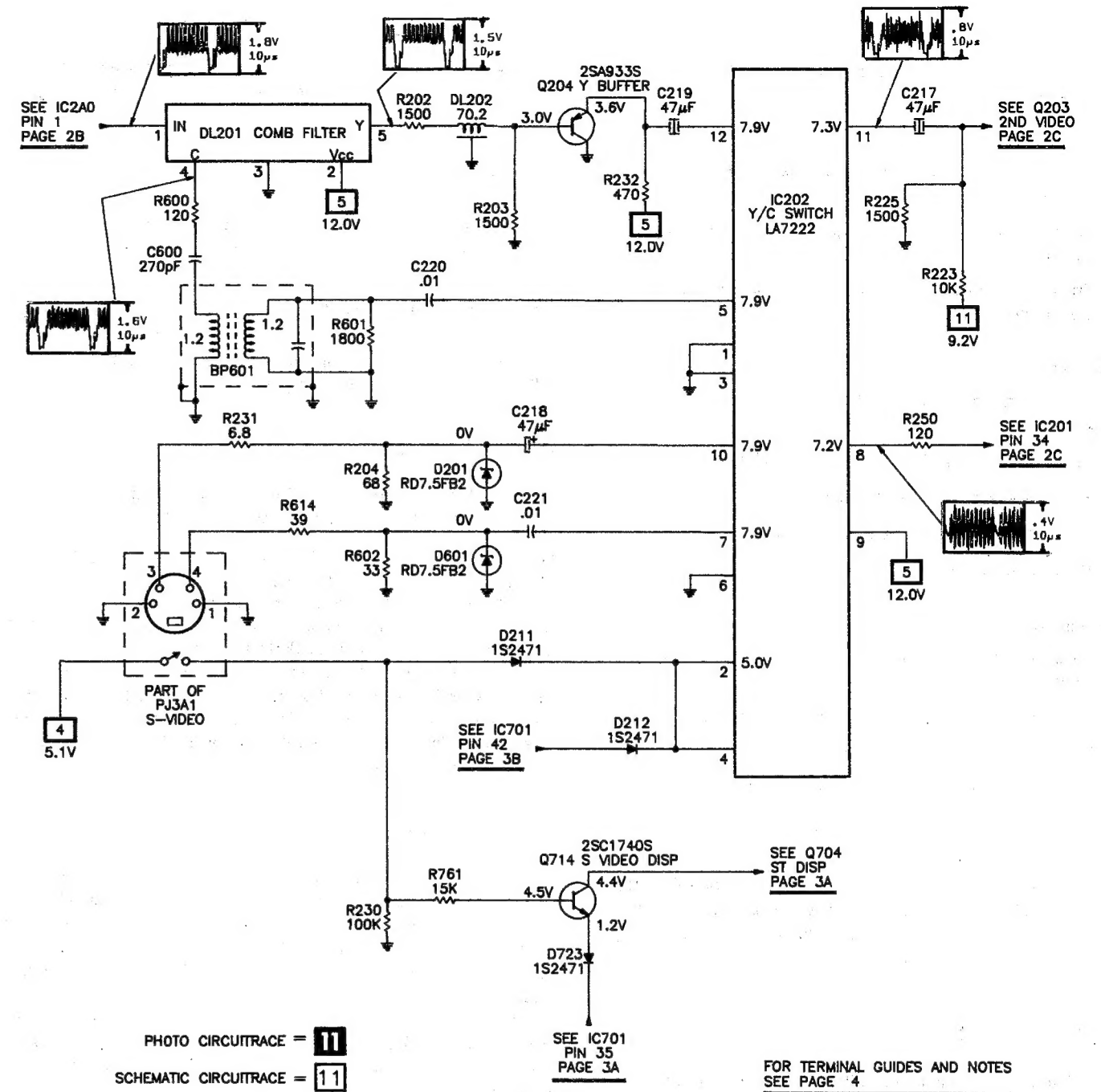
POWER SUPPLY SCHEMATIC



A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH **CIRCUITTRACE™**
© Howard W. Sams & Co. 1992

E

COMB FILTER/VIDEO SWITCHING SCHEMATIC



A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE[®]
© Howard W. Sams & Co. 1992

F

SAFETY PRECAUTIONS

SERVICE WARNING

ONLY qualified service technicians who are familiar with safety checks and guidelines should perform service work. For continued SAFETY:

- 1. Before replacing parts, disconnect power source to protect electrostatically sensitive parts.
- 2. Do not attempt to modify any circuit unless so recommended by the manufacturer.
- 3. When servicing chassis, use an isolation transformer between the line cord and power receptacle.

SERVICING HIGH VOLTAGE AND PICTURE TUBE

Use EXTREME CAUTION when servicing the High Voltage circuits.

- 1. To discharge static High Voltage, connect a 10-kilohm resistor in series with a test lead between chassis and picture tube anode lead.
- 2. DO NOT lift picture tube by the neck.
- 3. ALWAYS wear shatterproof goggles when handling picture tube to protect eyes in case of implosion.

X-RAY RADIATION AND HIGH VOLTAGE LIMITS

Be aware of the instructions and procedures covering x-ray radiation. In solid-state receivers and monitors, the picture tube is the only potential source of x-rays.

- 1. Keep an accurate High Voltage meter available at all times. Check meter calibration periodically.
- 2. Whenever servicing a chassis, check High Voltage at various brightness levels to be sure it is regulating properly.
- 3. Keep High Voltage at rated value, NO HIGHER. Excessive High Voltage may cause x-ray radiation or failure of associated components. DO NOT depend on protection circuits to keep voltage at rated value.
- 4. When troubleshooting a set with excessive High Voltage, avoid close contact with picture tube. DO NOT operate set longer than necessary. To locate the cause of excessive High Voltage, use a variable AC transformer to regulate voltage.
- 5. In present chassis, many electrical and mechanical components have safety-related characteristics which are not detectable by visual inspection. Such components are identified by a # on both the schematic and the parts list. For SAFETY, use only equivalent replacement parts when replacing these components.

SAFETY CHECKS – FIRE AND SHOCK HAZARD

Cold Leakage Checks for Sets with Isolated Ground

- 1. Unplug the AC cord, connect a jumper across the plug prongs, and turn the power switch ON.
- 2. Use an ohmmeter to measure the resistance between the jumpered AC plug and any exposed metal cabinet parts such as antenna screw heads, control shafts, or handle brackets. Exposed metal parts with a return path should measure between 200 kilohms and 5 megohms. Parts without a return path must register infinity.

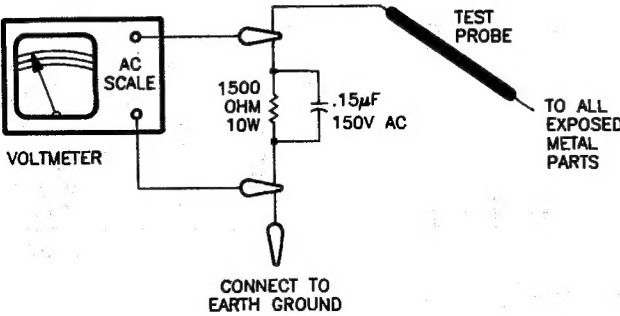
Hot Leakage Current Check

- 1. Plug the AC cord directly into AC outlet. DO NOT use an isolation transformer.
- 2. Use a 1500-ohm, 10-watt resistor in parallel with a .15-microfarad 150-volt AC capacitor to connect between any exposed metal parts on the set and a good earth ground. (See figure below.)
- 3. Use an AC voltmeter with at least 1000 ohms-per-volt sensitivity to measure the voltage across the resistor. Check all exposed metal parts and measure voltage at each point.
- 4. Voltage readings should not exceed .75 volts RMS (5 milliamps AC). Any value exceeding this limit constitutes a potential shock hazard and must be corrected.
- 5. If AC plug is not polarized, reverse the AC plug and repeat exposed metal part voltage measurement at each point.

GENERAL GUIDELINES

Perform a final SAFETY CHECK before returning set to customer.

- 1. Check repaired area for poorly soldered or de-soldered connections, and check entire circuit board for solder splashes.
- 2. Check inner board wiring for pinched wires or wires contacting any high-wattage resistors.
- 3. Check that all control knobs, shields, covers, grounds and mounting hardware have been replaced. Be sure to replace all insulators and restore proper lead dress.



TROUBLESHOOTING

POWER SUPPLY

Check AC fuse F901 and DC fuse F951.

If F901 is open:

Check bridge rectifiers D3A0, and D953, capacitors C901, C954 thru C956, and electrolytic C953.

If F951 is open:

Check IC951, and Q551.

Check for approximately 20.0V at the "+" pin of D3A0. If 20.0V is missing:

Check voltages and components associated with T991, and D3A0.

If 20.0V is present, apply 120VAC and check for 152V* at the "+" pin of D953.

If 152V* is missing:

Check line filter L901, and power relay K901.

If 152V* is present, check for 130V* at TP951E.

If 130V* is missing at TP951E:

Check the voltages and components associated with IC951.

If 130V* is present:

Refer to the "Horizontal" section of this Troubleshooting guide.

* Taken with respect to isolated ground.

HORIZONTAL

Determine if set is in shutdown by referring to the "High Voltage Shutdown" section of this Troubleshooting guide.

If set is not in shutdown, inject a horizontal signal at the base of Q551.

If horizontal deflection is now present:

Check voltages, waveforms, and components associated with Q552, and pins 20, 22, 24, and 25 of IC201.

If horizontal deflection is still missing:

Check the voltages, waveforms, and components associated with Q551, and T551.

Check voltages, and components associated with D552, D553, D561, and D582.

The High Voltage Rectifier is part of T551 and if defective will affect performance of horizontal circuit.

If horizontal oscillator is off frequency:

Check voltages, waveforms, and components associated with pins 24, and 25 of IC201.

Horizontal linearity or foldover problems may be caused by capacitors C552, and C570 being defective.

VERTICAL

Inject a vertical signal at pin 2 of IC401.

If vertical deflection is now present:

Check voltages, waveforms, and components associated with pin 27 of IC201.

If vertical deflection is still missing:

Check the voltages, waveforms, and components associated with IC401.

Vertical linearity or foldover problems may be caused by electrolytics C450, C452, C454, C455, C458 being defective.

HIGH VOLTAGE SHUTDOWN

The High voltage is monitored by D582, rectifying pulses from T551. Should the high voltage increase, the rectified voltage at the cathode of zener diode D503 will also increase and trigger pin 23 of IC201 into shutdown.

To troubleshoot, remove R520 from the circuit, and use a variac for AC power.

Start with 90VAC and increase as necessary to locate and repair the defect. Return R520 to the circuit.

NOTE: Care should be taken in defeating the high voltage shutdown circuit as this may cause excessive X-ray Radiation and damage to the CRT, T551, and associated components. Monitor high voltage and troubleshoot.

IF AGC

Inject a video IF signal at IF input and check for video on CRT.

If video is present:

Check the tuner, tuner control, and tuner afc circuits.

If video is missing, check for a video waveform at TP36. If waveform is present at TP36:

Refer to the "Video" section of this Troubleshooting guide.

If waveform is missing at TP36, apply AGC bias to pin 10 of IC201.

If video is now present at TP36:

Check the voltages, waveforms, and components associated with pins 8, 10, and 40 of IC201.

If video waveform is still missing from TP36:

Check the voltages, waveforms, and components associated with Q130, and pins 5 thru 10, 35, 37, 38, 40, 41, and 42 of IC201.

A defective AGC circuit can cause an overloaded picture, excessive snow, or loss of audio and video. See the AGC Voltage Chart for AGC voltages with signal.

AGC Voltage Chart	
IC201	
Pin 8	5.6V
Pin 10	7.1V
Pin 40	7.7V

VIDEO

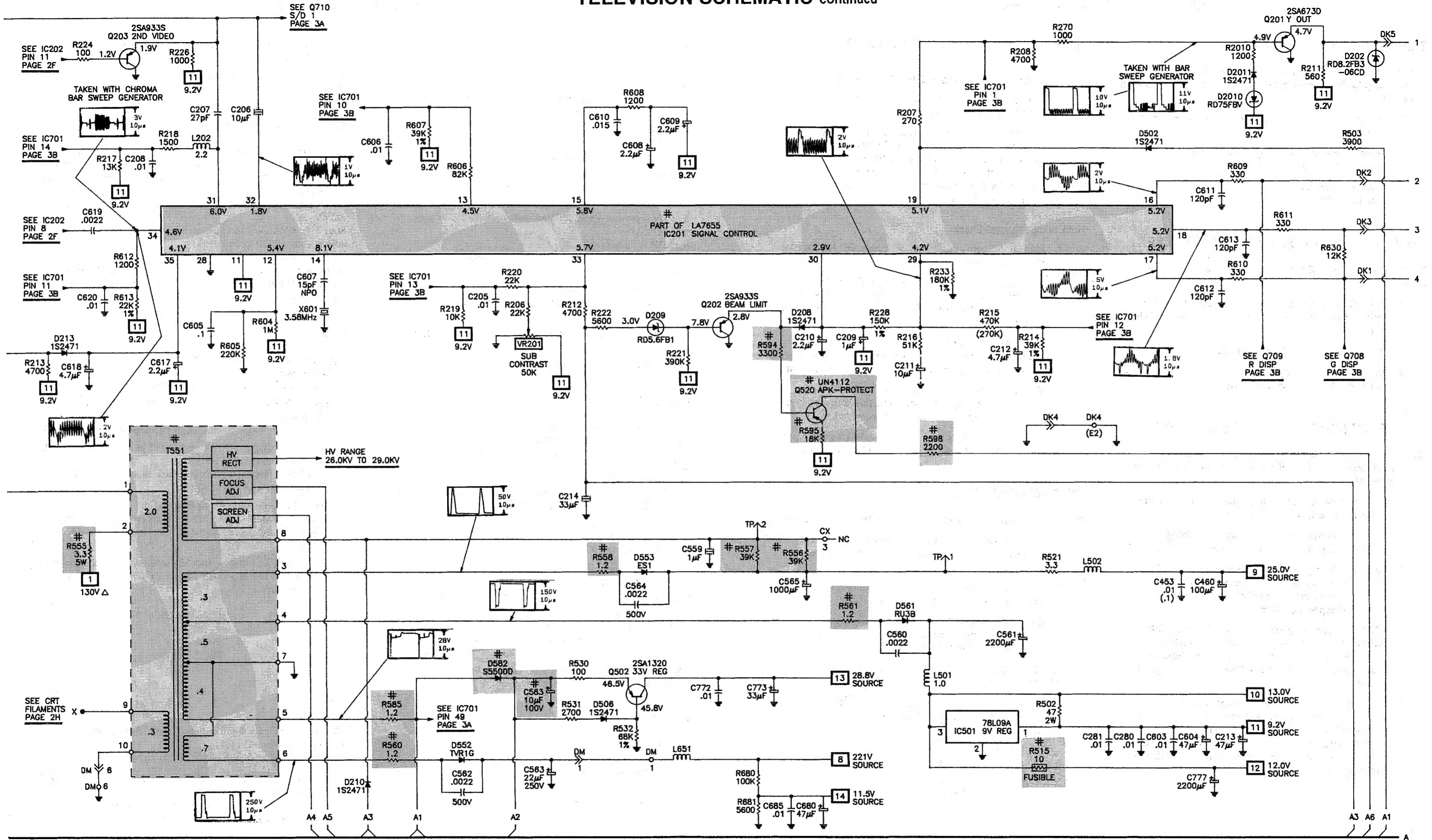
Inject a video signal at TP36 and check for Video on CRT.

If video is present on CRT:

Refer to the "IF AGC" section of this Troubleshooting guide.

If there is no video on CRT, check for a video waveform on pin 32 of IC201. If video is missing on pin 32 of IC201:

Check the voltages, waveforms, and components associated with Q101, IC2A0, IC202, Q204, and Q203.

TELEVISION SCHEMATIC continued

TROUBLESHOOTING continued

If waveform is present at pin 32 of IC201, check for a video waveform at pin 19 of IC201. If video is missing:
 Check the voltages, waveforms, and components associated with pins 29 thru 32 of IC201.

If waveform is present at pin 19 of IC201:
 Check voltages, waveforms, and components associated with Q201, Q651 thru Q656, and the CRT.

If brightness is inadequate or cannot be controlled:
 Check voltages, and components associated with pin 29 of IC201, and pin 7 of the CRT.

SYNC

If horizontal and vertical sync are missing:
 Check the voltages, waveforms, and components associated with pin 26 of IC201.

If horizontal sync is missing:
 Check the voltages, waveforms, and components associated with pins 22, 24, and 26 of IC201.

If vertical sync is missing:
 Check the voltages, waveforms, and components associated with pins 26, and 27 of IC201.

CHROMA

Check for a chroma waveform at pin 34 of IC201. If waveform is missing at pin 34 of IC201:
 Check the voltages, waveforms, and components associated with pin 34 of IC201, and IC202.

If waveform is present at pin 34 of IC201, check for the proper waveforms at pins 16, 17, and 18 of IC201. If the waveforms are missing:
 Check the voltages, waveforms, and components associated with pins 11 thru 18, 33, 34, and 35 of IC201.

 Check the 3.58MHz oscillator at pin 14 of IC201.

If proper waveforms are present at pins 16, 17, 18 of IC201:
 Refer to the "Raster" section of this Troubleshooting guide.

RASTER

Check the CRT and CRT voltages.
If red is missing:
 Check voltages, waveforms, and components associated with pin 16 of IC201, Q651, and Q654.

If green is missing:
 Check the voltages, waveforms, and components associated with pin 17 of IC201, Q652, and Q655.

If blue is missing:
 Check the voltages, waveforms, and components associated with pin 18 of IC201, Q653, and Q656.

If raster has keystone shape:
 Check the deflection yoke L491.

If raster has height or width problems:
 Refer to the "Vertical", "Horizontal", and "Power Supply" sections of this Troubleshooting guide.

AUDIO

Select an active TV channel and check for an audio waveform at pin 2 of IC350. If waveform is missing:
 Check voltages, waveforms, and components associated with pins 2, 3, 4, and 39 of IC201, and IC330.

If audio waveform is present at pin 2 of IC350, check for audio waveforms at pins 34 and 35 of IC350. If waveforms are missing at pins 34 and 35 of IC350:
 Check voltages, waveforms, and components associated with IC350.

If audio waveforms are present at pins 34 and 35 of IC350, check for audio waveforms at pins 23 and 25 of IC3A1.
If audio waveforms are missing at pins 34 and 35 of IC3A1:
 Check voltages, waveforms, and components associated with IC3A1 and Q3A1.

If audio waveforms are present at pins 34 and 35 of IC3A1:
 Check voltages, waveforms, and components associated with IC3A2, and Q3A0.

STEREO ADJUSTMENTS

Note: The following adjustments were made with B&K model 2009 MTS TV Stereo generator connected to the antenna terminals. Equivalent generator may be used.

COMPOSITE LEVEL

Select pilot, 1kHz audio frequency, and L+R modulating signal. Select stereo mode on receiver. Connect an oscilloscope to TP-MO. Adjust composite level control VR350 for 500mV p-p.

STEREO FILTER

Select SAP, 1kHz audio frequency, and L-R modulating signal. Select SAP mode on receiver. Connect an oscilloscope to TP-N1. Adjust stereo filter control VR351 for maximum.

SAP FILTER

Select pilot, 1kHz audio frequency, and L+R modulating signal. Select stereo mode on receiver. Connect an oscilloscope to TP-L4. Adjust DBX filter control VR352 for 400mV p-p.

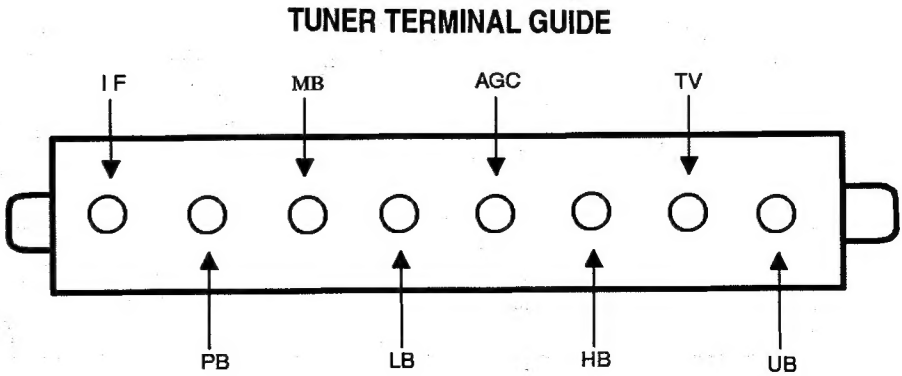
STEREO VCO

Select pilot, 1kHz audio frequency, and L-R modulating signal. Select stereo mode on receiver. Connect a frequency counter to TPM1. Connect a jumper to TP-L1 and TP-L2. Adjust stereo VCO control VR355 for 15.75kHz. Remove jumper.

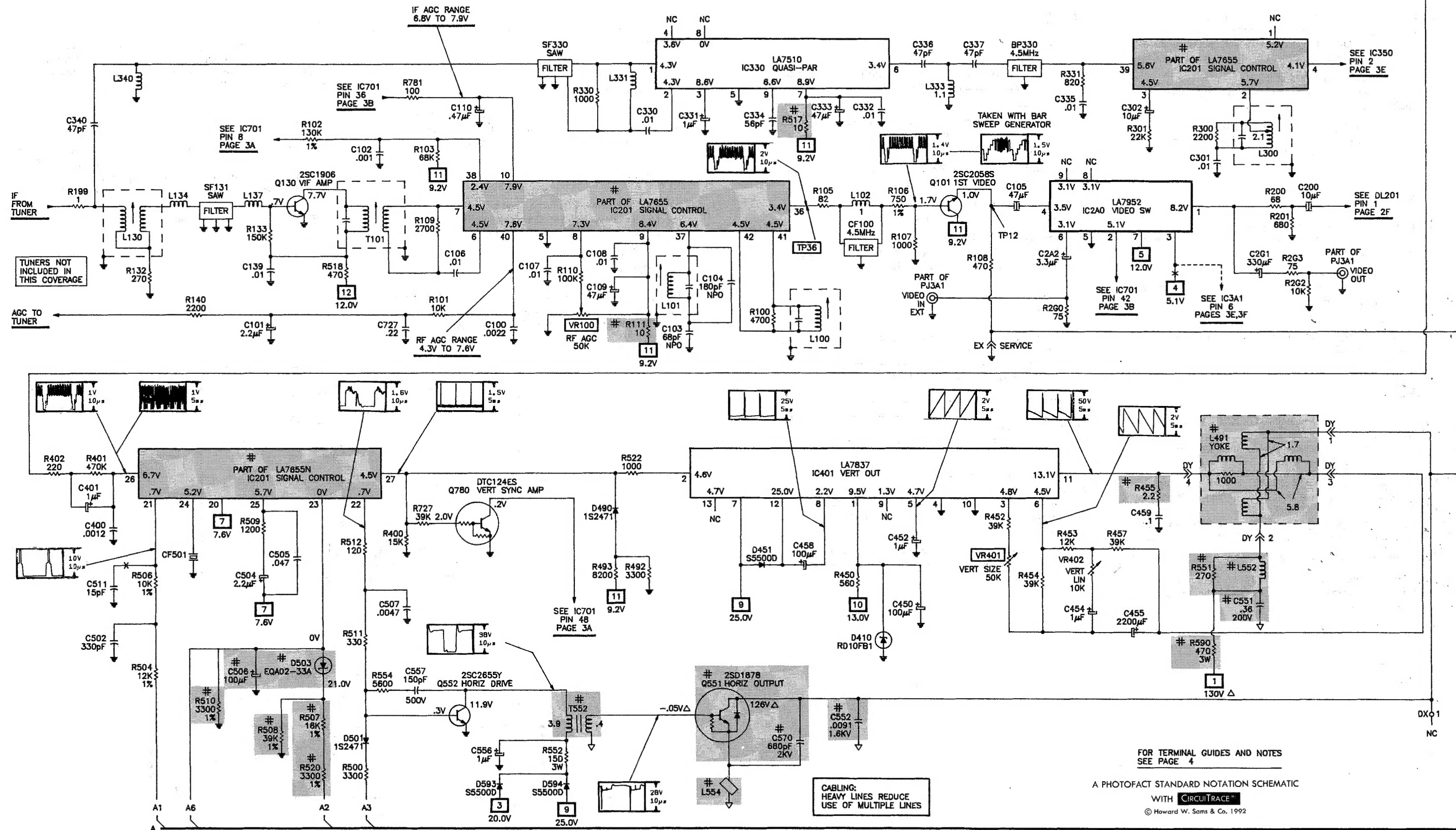
SEPARATION AND SPECTRAL

Select pilot, 300Hz audio frequency, and L modulating signal. Select stereo mode on receiver. Connect an oscilloscope to TP-M2. Adjust separation control VR353 for minimum amplitude of waveform. Select 8kHz audio frequency. Adjust spectral control VR354 for minimum amplitude of waveform. Repeat adjustments until no further decrease in waveform amplitude occurs.

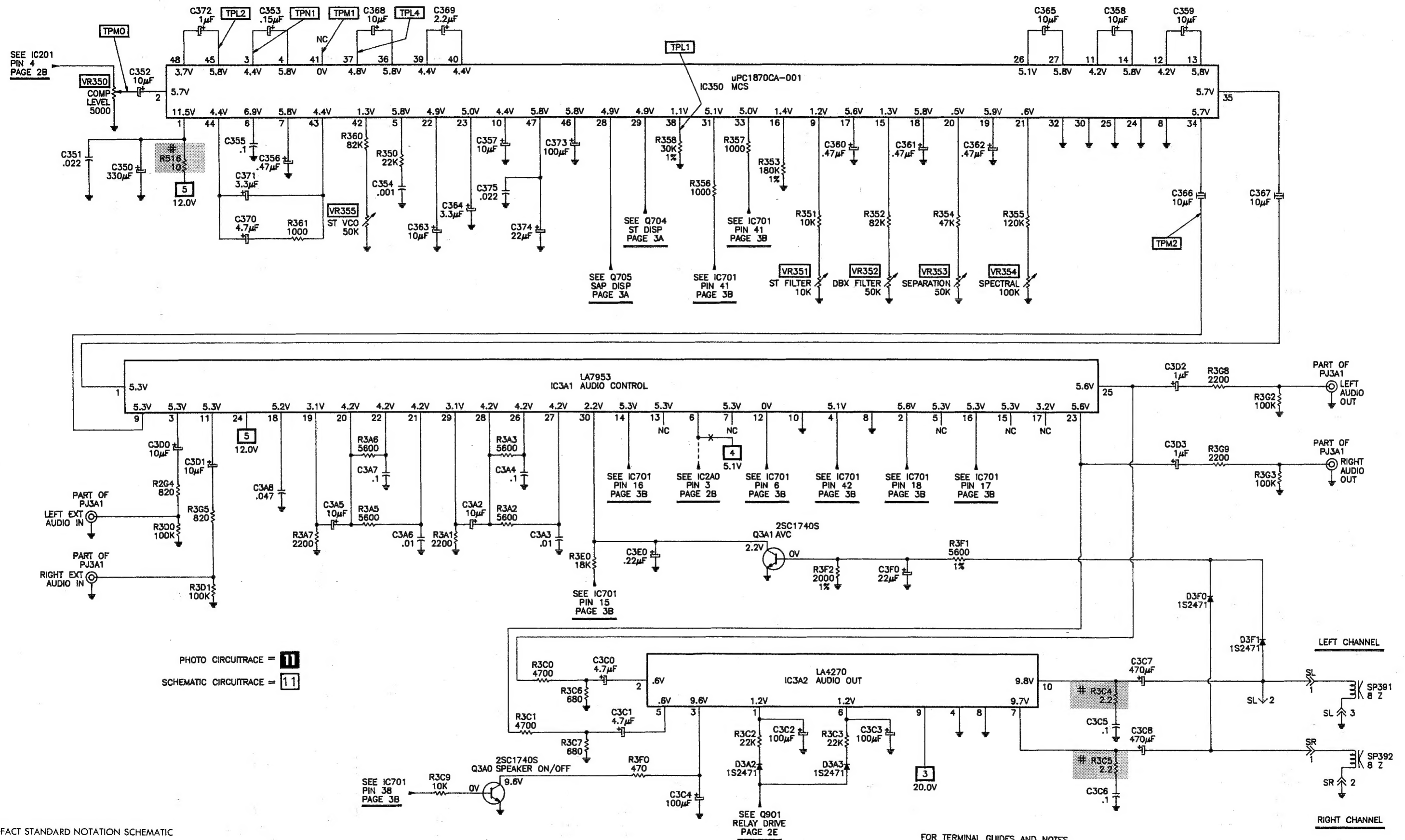
TUNER VOLTAGE CHART			
	VHF Low Band	VHF High Band	UHF Band
PB	5.0V	5.0V	5.0V
MB	12.0V	12.0V	12.0V
LB	11.4V	0V	0V
AGC	6.8V	6.8V	6.8V
HB	0V	11.8V	0V
TV	1.2V	4.2V	6.5V
UB	0V	0V	11.8V
Note: VHF Low Band voltages taken on channel 2. VHF High Band voltages taken on channel 7. UHF Band voltages taken on channel 14.			



TELEVISION SCHEMATIC



AUDIO SCHEMATIC



A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE™
© Howard W. Sams & Co. 1992

MAIN BOARD, GRIDTRACE LOCATION GUIDE

BP330	C-11	C360	L-16	C610	G-11	C3A2	B-6	D713	I-13	L202	J-11	R204	D-3	R499	H-9	R707	F-17	R775	C-8	S705	F-18
BP601	F-11	C361	M-16	C611	G-10	C3A3	A-6	D715	K-14	L300	F-13	R206	E-8	R500	L-11	R708	F-16	R776	C-9	S706	G-18
C100	G-12	C362	L-17	C612	G-10	C3A4	A-6	D716	K-14	L331	B-11	R207	F-9	R502	E-6	R709	F-16	R777	C-8	S707	G-18
C101	G-12	C363	L-17	C613	G-10	C3A5	B-7	D717	C-15	L333	B-11	R208	F-9	R503	F-9	R710	F-15	R778	C-9	S708	H-18
C102	H-12	C364	M-17	C617	I-12	C3A6	A-7	D719	M-13	L340	C-11	R210	D-8	R504	F-9	R711	F-15	R779	B-10	S709	I-18
C103	I-13	C365	K-17	C619	E-9	C3A7	A-7	D720	K-14	L501	H-7	R211	E-10	R505	H-9	R712	F-15	R781	G-13	S710	I-18
C104	I-12	C366	L-14	C620	J-12	C3A8	B-7	D721	L-18	L502	H-8	R212	L-11	R506	G-9	R713	F-15	R783	B-9	SF131	E-12
C105	E-8	C367	K-14	C700	I-17	C3A9	B-15	D722	D-17	L551	J-7	R213	J-12	R507	I-9	R714	F-15	R784	C-9	SF330	B-10
C106	G-12	C368	K-16	C701	E-16	C3C0	B-14	D723	I-15	L554	L-6	R214	J-10	R508	H-9	R715	F-15	R785	K-11	SL	B-17
C107	F-12	C369	J-16	C702	H-17	C3C1	B-12	D730	M-14	L700	F-15	R215	J-10	R509	H-10	R718	F-14	R786	D-15	SR	B-17
C108	F-12	C370	J-15	C703	F-16	C3C2	B-14	D750	J-14	L710	C-14	R217	K-11	R510	H-10	R719	F-15	R787	D-15	T101	F-12
C109	F-11	C371	K-15	C704	E-15	C3C3	B-14	D751	H-13	L901	F-3	R218	J-11	R511	K-11	R720	I-14	R788	F-16	T551	J-3
C110	F-11	C372	K-15	C705	E-14	C3C4	B-14	D771	E-14	PJ3A0	A-16	R219	K-12	R512	H-9	R721	I-14	R790	G-17	T552	L-8
C139	F-12	C373	J-14	C706	F-14	C3C5	A-12	D772	E-14	Q101	J-12	R220	K-12	R514	I-8	R722	I-14	R910	I-2	TP36	H-11
C200	B-4	C374	K-14	C707	E-15	C3C6	A-13	D773	C-10	Q130	F-12	R221	J-10	R515	D-7	R723	I-14	R954	M-6	TP951E	M-8
C201	C-5	C375	K-14	C708	E-15	C3C7	B-13	D780	H-16	Q201	E-9	R222	J-9	R516	L-14	R724	H-15	R956	G-5	TP951G	M-9
C205	J-11	C400	H-10	C709	E-15	C3C8	B-13	D901	E-5	Q202	J-10	R223	J-11	R517	D-11	R725	I-16	R957	G-5	TPL1	K-16
C206	H-11	C401	H-10	C710	E-15	C3D0	A-3	D953	G-5	Q203	J-11	R224	J-10	R518	E-12	R726	I-16	R960	L-9	TPL2	K-15
C207	I-11	C450	F-7	C711	D-17	C3D1	A-3	D3A0	B-17	Q204	B-4	R225	J-11	R520	H-8	R727	K-11	R961	L-9	TPL4	K-16
C208	J-11	C452	F-7	C712	F-14	C3D2	B-3	D3A2	C-14	Q502	G-7	R226	J-11	R521	I-8	R728	H-16	R962	M-9	TPM0	M-15
C209	I-11	C453	H-7	C713	F-14	C3D3	B-3	D3A3	C-14	Q551	K-7	R228	H-11	R522	E-8	R729	H-16	R2G0	A-3	TPM1	K-15
C210	H-11	C454	F-7	C714	H-15	C3E0	C-7	D3F0	B-13	Q552	L-11	R230	D-3	R530	H-6	R730	E-17	R2G2	C-3	TPM2	M-14
C212	K-10	C455	F-6	C715	H-15	C3F0	B-12	D3F1	B-13	Q593	E-6	R231	D-3	R531	H-6	R731	D-17	R2G3	C-3	TPN1	L-15
C213	J-11	C458	G-8	C716	H-16	CF100	J-13	DK	E-9	Q702	D-17	R232	C-4	R532	H-7	R732	D-17	R2G4	A-3	VR100	D-12
C214	I-6	C459	G-7	C717	I-16	CF501	H-10	DL201	C-5	Q704	K-13	R233	G-9	R551	J-6	R733	C-15	R3A0	C-15	VR201	D-7
C217	D-3	C460	G-7	C718	I-16	D201	D-2	DL202	A-4	Q705	K-13	R250	D-4	R552	L-10	R734	K-13	R3A1	B-6	VR350	M-15
C208	D-4	C480*	G-8	C719	H-17	D202	E-10	DM	H-1	Q708	D-14	R297	J-10	R554	L-11	R735	K-14	R3A2	B-6	VR351	M-16
C219	C-3	C501	G-9	C721	E-17	D203	D-16	F901	E-3	Q709	D-15	R298	J-10	R555	M-5	R736	K-13	R3A3	B-6	VR352	M-16
C220	C-3	C502	F-9	C723	M-13	D205	C-12	F951	J-9	Q710	M-14	R299	H-11	R556	I-6	R737	K-14	R3A5	B-7	VR353	M-16
C221	C-3	C504	I-10	C725	M-14	D206	C-12	IC201	G-12	Q711	M-14	R300	F-13	R557	I-6	R738	C-8	R3A6	B-7	VR354	M-17
C223	D-4	C505	H-10	C727	B-10	D208	I-11	IC202	D-4	Q712	L-13	R301	G-13	R558	I-5	R739	D-15	R3A7	A-7	VR355	J-15
C230	D-16	C506	H-10	C771	C-8	D209	J-10	IC330	A-11	Q713	L-18	R330	B-11	R560	L-3	R741	D-16	R3C0	C-13	VR401	F-7
C231	D-16	C507	I-10	C772	B-8	D210	H-6	IC350	L-15	Q714	I-14	R331	B-11	R561	I-4	R743	D-13	R3C1	B-13	VR402	F-7
C280	F-10	C511	G-9	C773	B-8	D211	D-5	IC401	E-8	Q780	K-12	R350	M-15	R585	I-3	R744	D-15	R3C2	B-14	VR701	H-16
C281	H-12	C551	J-6	C774	C-8	D212	C-4	IC501	E-6	Q901	E-6	R351	K-15	R591	E-6	R745	D-13	R3C3	B-14	X601	F-11
C301	F-13	C552	L-6	C775	C-8	D213	J-12	IC701	G-16	Q3A0	B-15	R352	M-16	R599*	G-9	R746	D-15	R3C4	A-12	X701	H-15
C302	G-12	C554	K-5	C776	C-8	D298	J-10	IC702	F-17	Q3A1	B-12	R353	M-15	R600	C-4	R749	M-14	R3C5	A-13	Z701	M-18
C330	B-10	C556	L-11	C777	A-8	D299	I-11	IC771	B-8	R100	H-12	R354	M-17	R601	C-3	R750	M-14	R3C6	A-14		
C331	A-11	C557	L-11	C778	B-9	D401	H-16	IC951	M-8	R101	G-12	R355	M-17	R602	C-2	R751	M-14	R3C7	B-13		
C332	B-11	C559	I-6	C779	C-10	D410	E-7	IC2A0	B-5	R102	H-13	R356	I-16	R604	F-11	R752	M-13	R3C9	G-13		
C333	B-11	C560	I-4	C795	F-17	D451	G-7	IC3A0	A-16	R103	I-12	R357	I-16	R605	E-11	R753	I-8	R3D0	A-3		
C334	C-11	C561	I-8	C796	F-14	D490	E-7	IC3A1	B-6	R105	I-12	R358	J-16	R606	G-9	R755	M-13	R3D1	A-3		
C335	B-11	C563	K-2	C901	F-2	D501	L-11	IC3A2	A-14	R106	J-12	R360	J-15	R607	K-11	R756	L-14	R3E0	D-13		
C336	B-11	C564	I-5	C910	K-8	D502	F-9	J701	F-14	R107	J-12	R361	J-15	R608	F-10	R757	I-15	R3F0	B-14		
C337	B-11	C565	I-7	C911	K-8	D503	H-10	J702	F-14	R108	J-12	R400	I-10	R609	F-10	R758	K-18	R3F1	B-13		
C340	C-10	C570	K-7	C953	G-2	D506	G-7	JA	F-4	R109	G-12	R401	H-10	R610	F-10	R759	H-15	R3F2	B-12		
C350	L-15	C583	H-7	C954	H-6	D552	L-3	JB	A-17	R110	F-12	R402	I-11	R611	F-10	R761	H-13	R3G2	B-3		
C351	L-14	C599*	F-9	C955	G-5	D553	I-5	K951	E-5	R111	E-11	R450	E-7	R612	J-12	R762	A-9	R3G3	B-3		
C352	M-15	C600	C-4	C956	G-3	D561	H-4	L100	H-13	R132	C-11	R452	F-7	R613	J-12	R763	A-9	R3G5	A-3		
C353	L-15	C603	F-11	C957	M-2	D582	H-3	L101	I-13	R133	F-12	R453	F-7	R614	C-2	R766	D-15	R3G8	B-3		
C354	M-15	C604	F-11	C960	L-9	D593	D-6	L102	J-12	R140	B-10	R454	F-7	R630	F-10	R767	F-15	R3G9	B-3		
C355	L-15	C605	F-11	C2A0	B-5	D599	E-6	L130	D-11	R199	D-10	R455	G-7	R701	D-13	R768	F-15	RP901	F-5		
C356	L-15	C606	G-9	C2A2	B-3	D601	C-2	L133	E-13	R200	B-5	R457	F-7	R702	F-16	R769	I-15	S701	C-18		
C357	L-16	C607	G-11	C2G1	A-5	D710	J-13	L137	E-12	R201	B-4	R480*	G-8	R703	F-16	R772	E-14	S702	D-18		
C358	L-16	C608	F-10	C3A0	B-16	D711	J-13	L200	C-12	R202	B-4	R492	E-7	R705	E-16	R773	B-8	S703	E-18		
C359	M-16	C609	E-11	C3A1	B-7	D712	I-13	L201	D-9	R203	B-4	R493	E-7	R706	F-17	R774	C-8	S704	E-18		

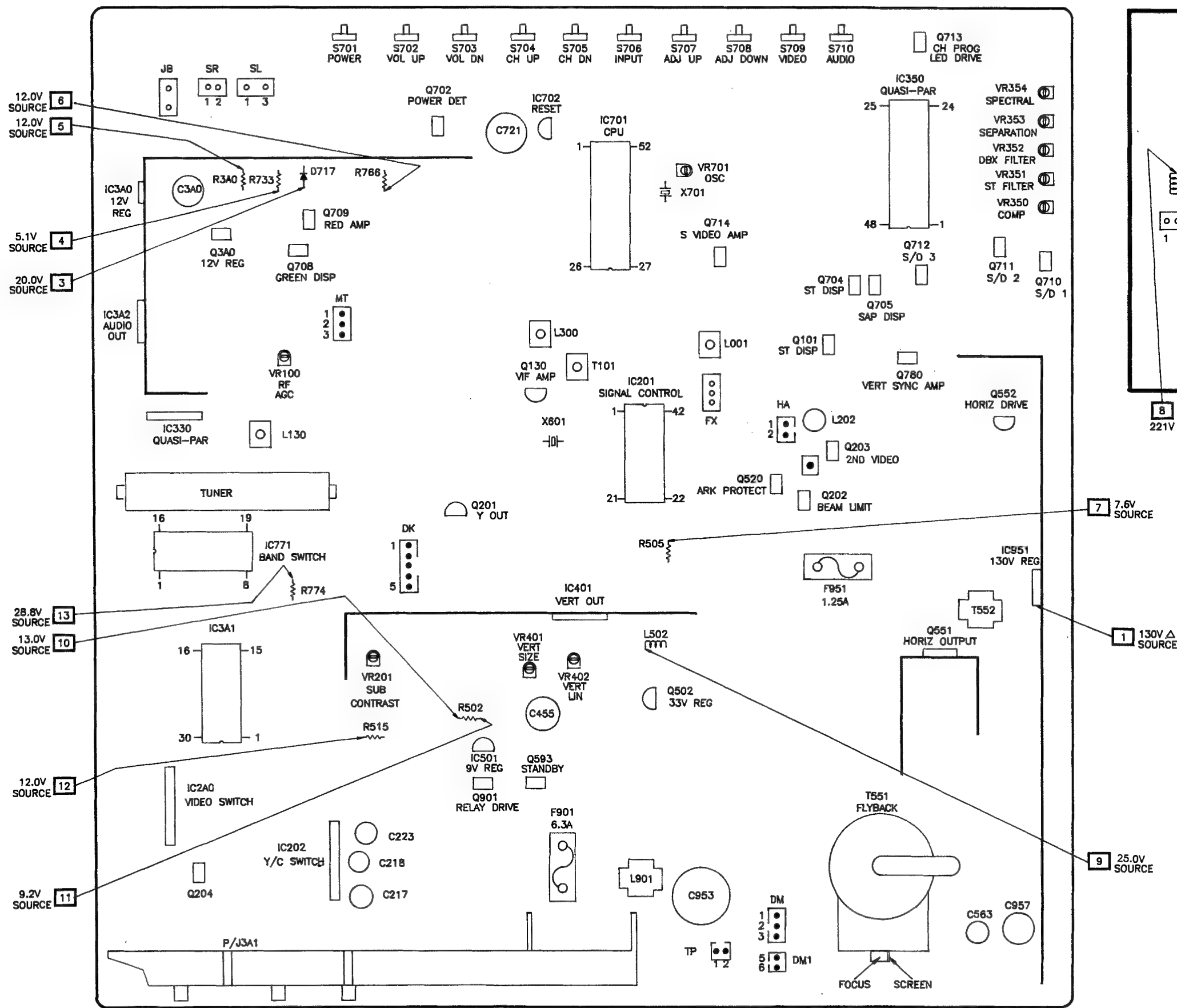
* LOCATED ON
BOTTOM OF
BOARD

mitsubishi

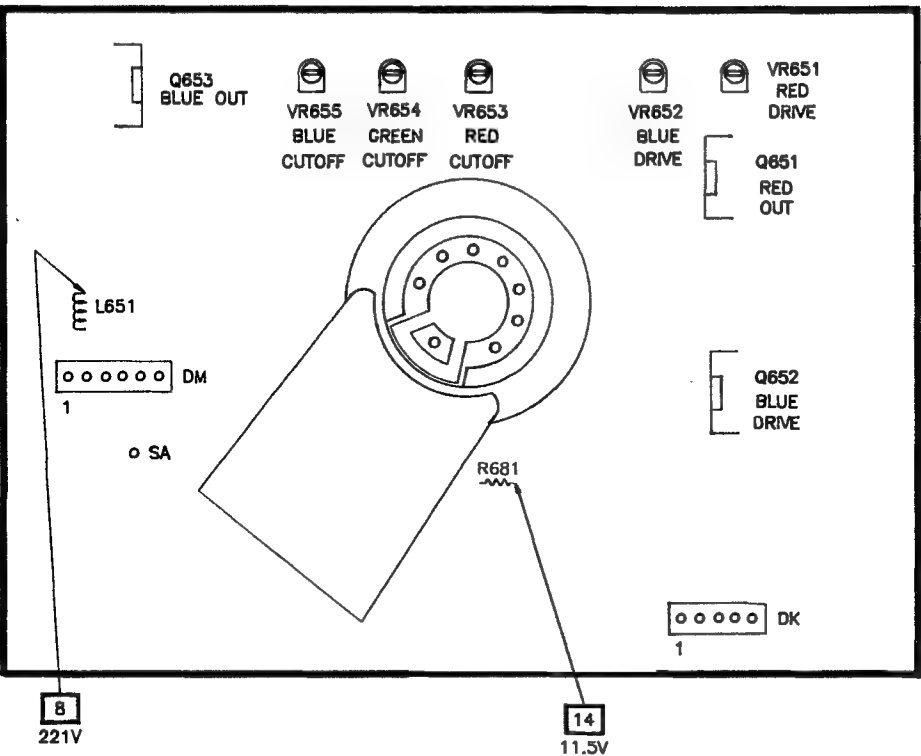
MODEL CS-2010R

PLACEMENT CHART

MAIN BOARD



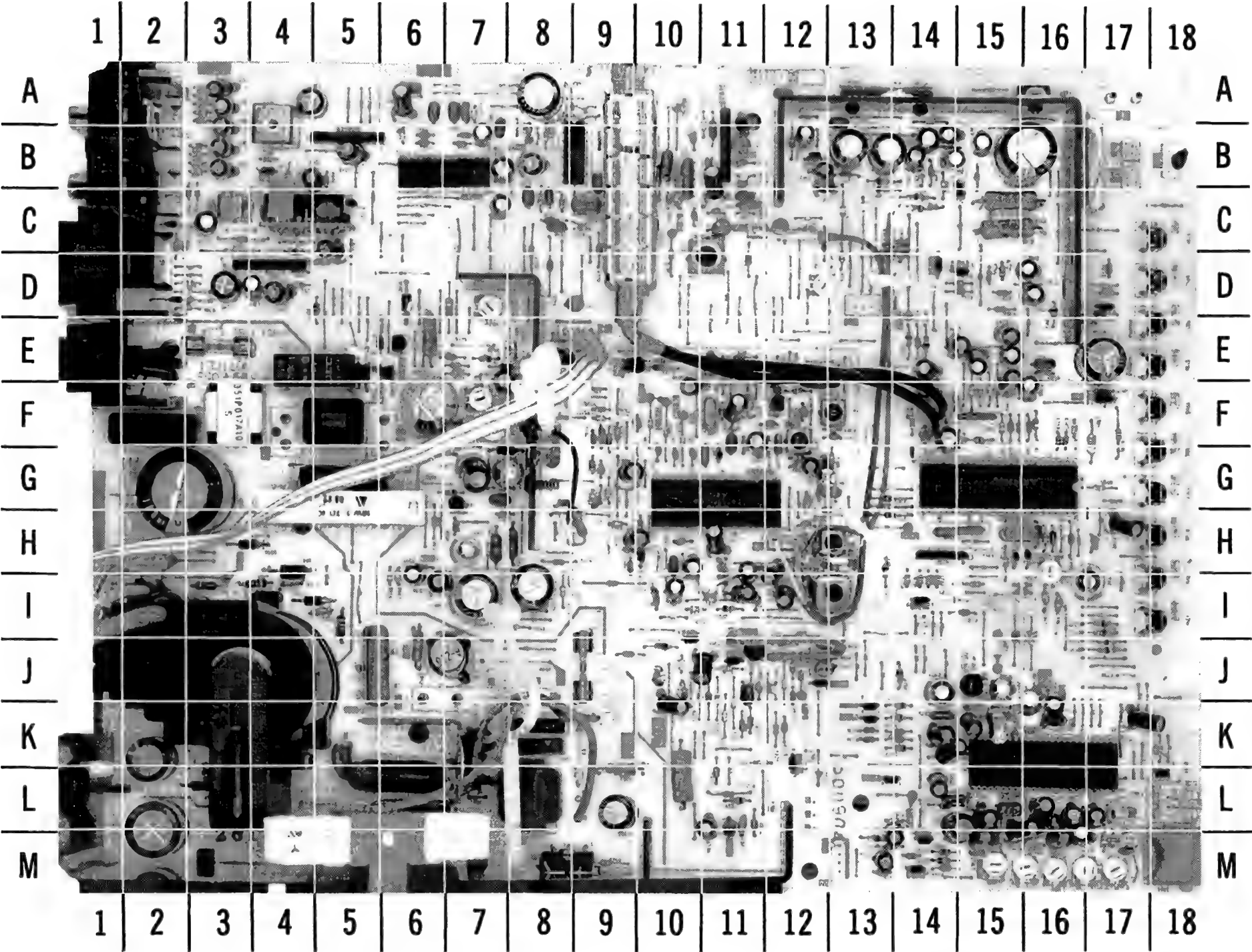
CRT BOARD



MITSUBISHI

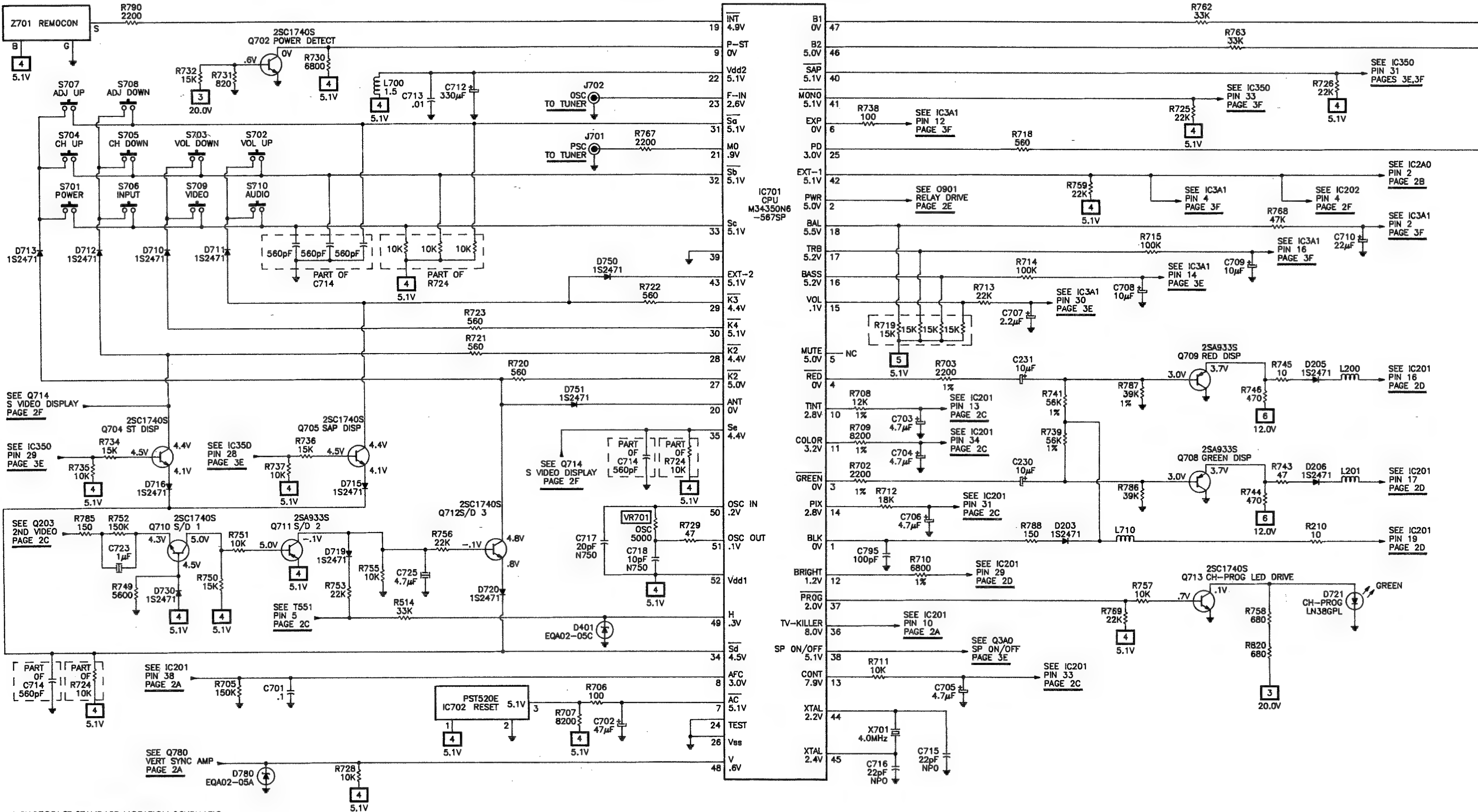
MODEL CS-2010R

MAIN BOARD



A HOWARD W. SAMS GRIDTRACE™ PHOTO

SYSTEMS CONTROL SCHEMATIC

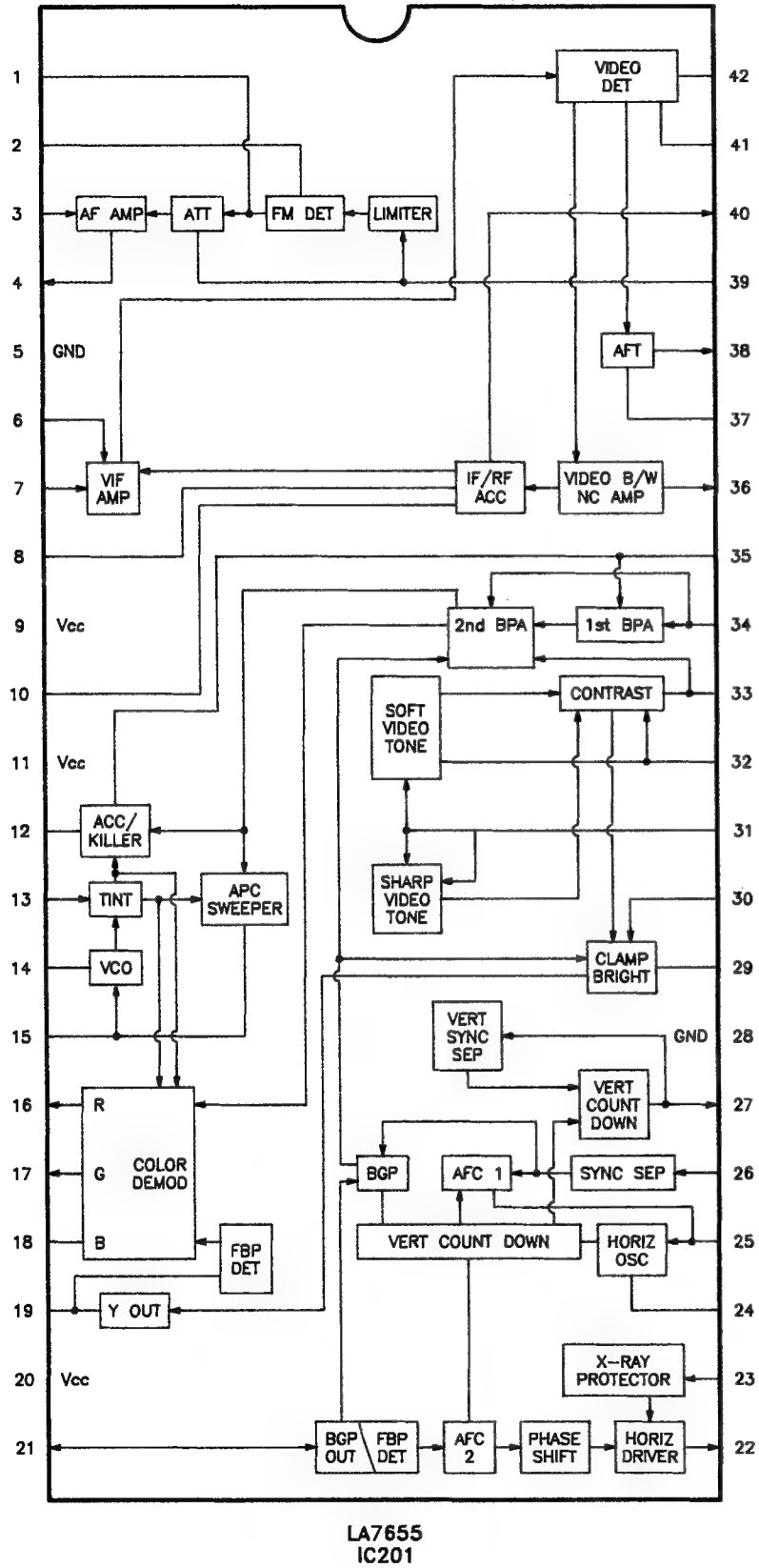


A PHOTOFAC STANDARD NOTATION SCHEMATIC

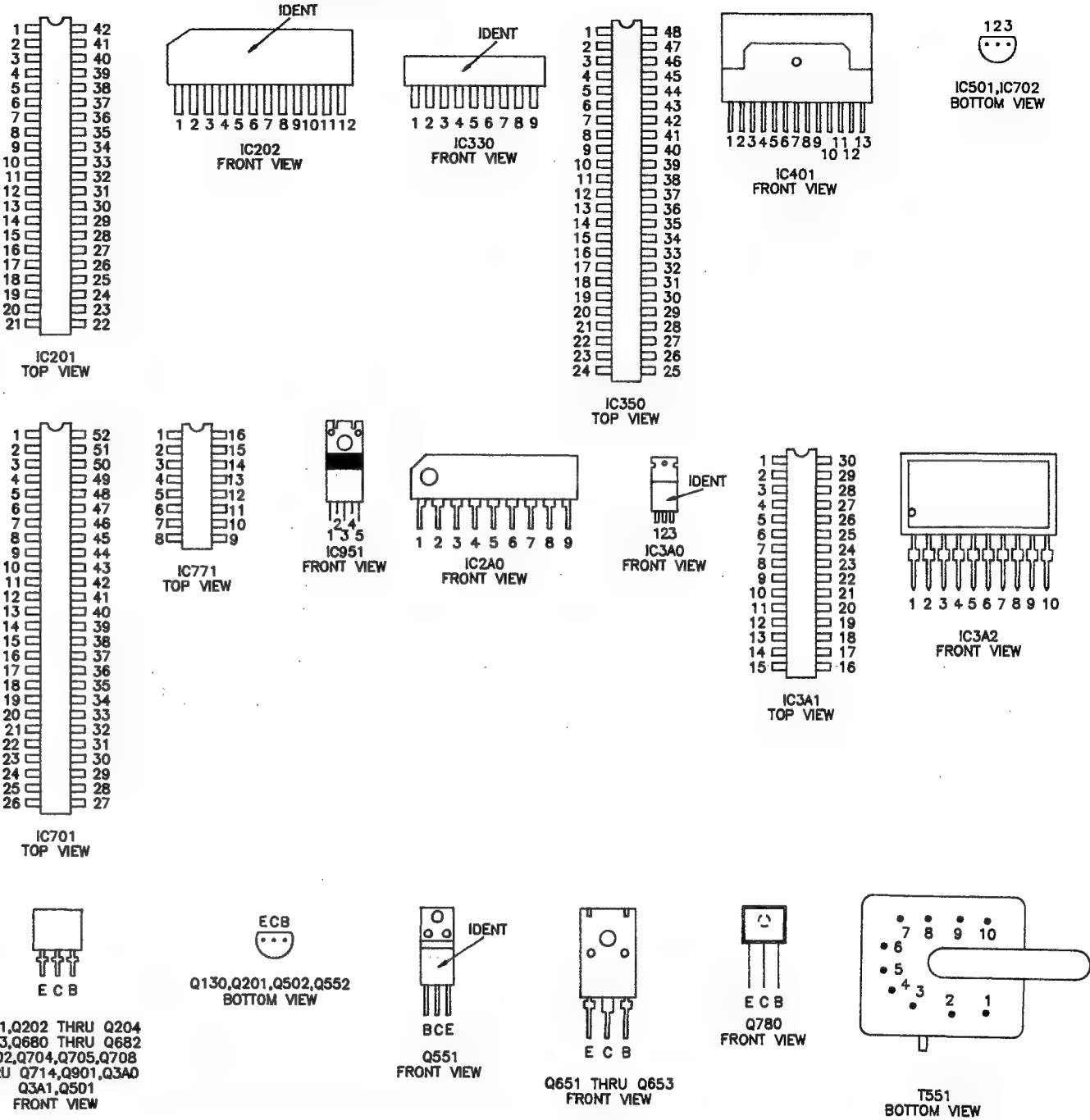
WITH CIRCUITTRACE

© Howard W. Sams & Co. 1992

IC FUNCTIONS continued



TERMINAL GUIDES AND NOTES



For SAFETY use only equivalent replacement part; see parts list.

-X- Circuitry not used in some versions

--- Circuitry used in some versions

⬇ Ground

⬇ Chassis

⬇ Common tie point

Waveforms and voltages are taken from ground, unless otherwise noted.

Waveforms: triggered scope, keyed rainbow generator. Item numbers in rectangles appear in adjustment instructions. Supply voltage maintained as shown at input. Voltages measured with digital meter, no signal. Controls adjusted for normal operation. Terminal identification may not be found on unit. Capacitors are 50 volts or less, 5% or greater unless noted. Electrolytic capacitors are 50 volts or less, 20% or greater unless noted. Resistors are 1/2W or less, 5% or greater unless noted. Value in () used in some versions. Measurements with switching as shown, unless noted.

C
SYSTEMS CONTROL SCHEMATIC continued

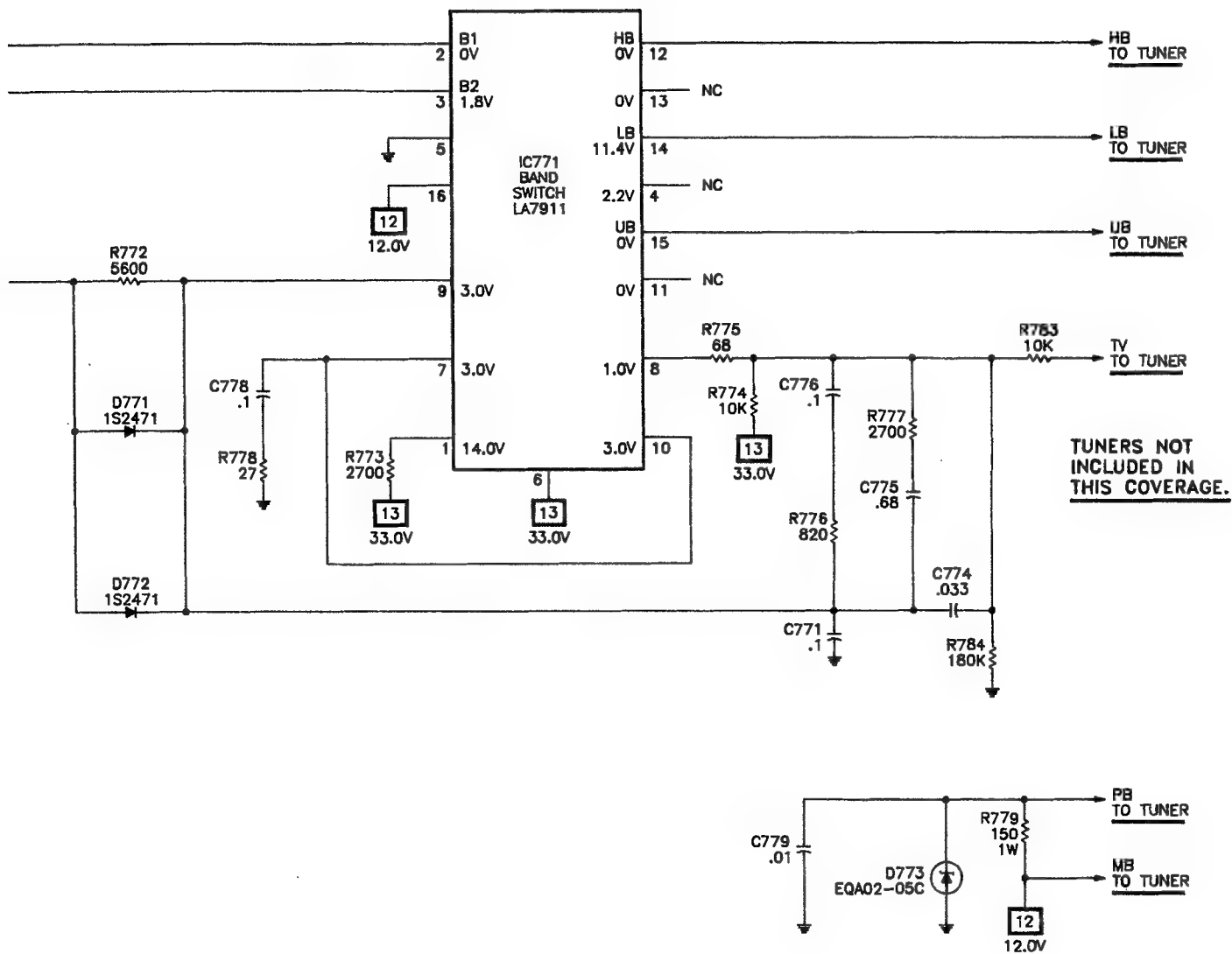


PHOTO CIRCUITRACE = 11
SCHEMATIC CIRCUITRACE = 11

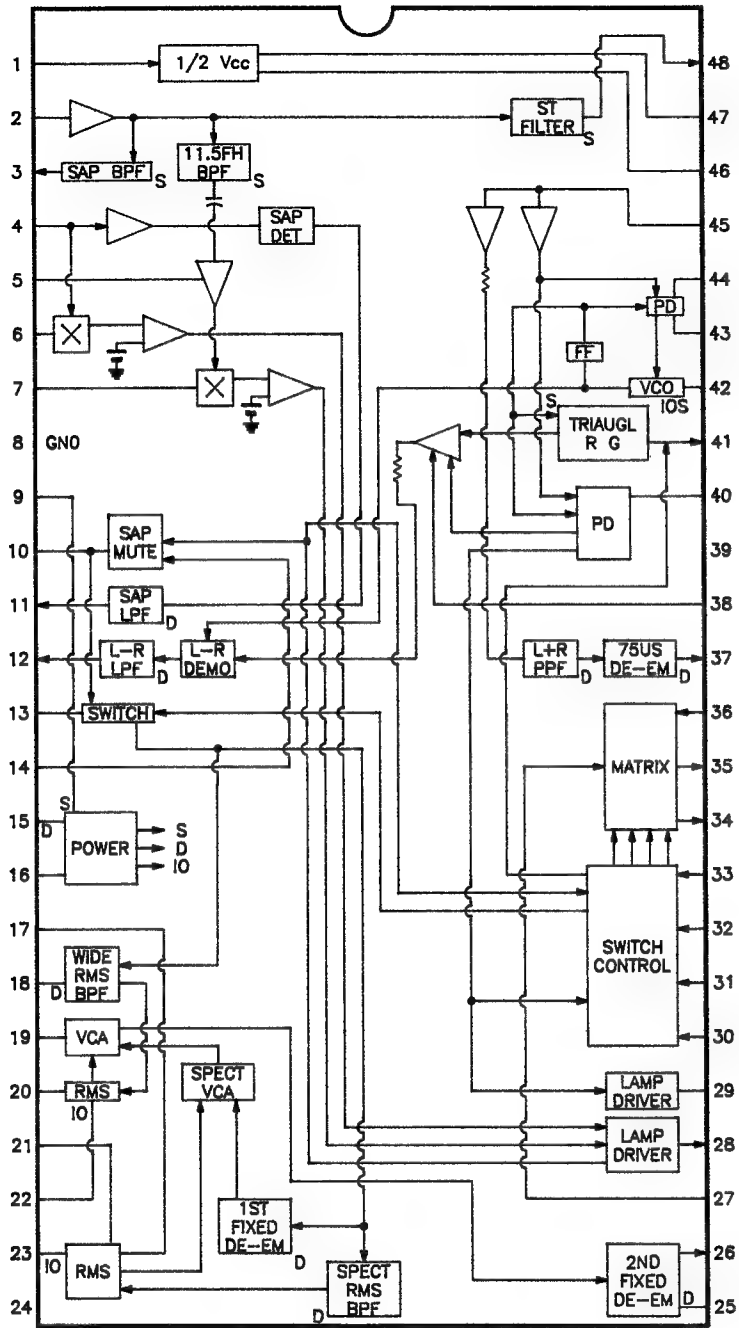
FOR TERMINAL GUIDES AND NOTES
SEE PAGE 4

TEST EQUIPMENT

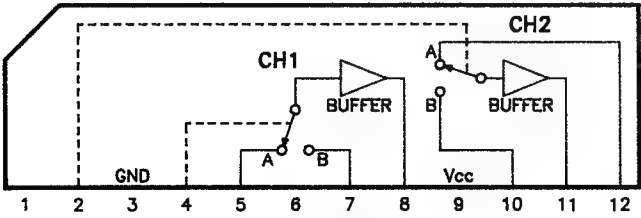
Test equipment listed by participating manufacturers illustrates typical or equivalent equipment used by Sams engineers to obtain measurements. This equipment is compatible with most types used by field service technicians.

Equipment	B&K Precision No.	Sencore No.
Oscilloscope	1541A, 2120, 2125, 2160, 2190, 2522	SC61
Generators		
RGB	1249A, 1260	RG67
Multiburst Signal	1251, 1260	VA62A
Color Bar	1211A, 1249A, 1251, 1260	VA62A, CG25, NT64
TV Stereo	2009	ST65, ST66
Analog VOM	114, 117, 177, 214	-
Digital VOM	377, 388HD, 2700 Series, 2831A, 2860, 2900 Series	DVM37, DVM56A, SC61
Frequency Meter	1803A, 1804A, 1805, 1822, 1851, 1855	FC71, SC61
Hi-Voltage Probe	HV-44	HP200
VOM/DMM	-	TP212
Accessory Probes	PR-28(HV)	-
Isolation Transformer	TR110, 1604, 1653, 1655	PR57
Capacitance Analyzer	810A, 815, 820, 830	LC76, LC101, LC102
CRT Analyzer	480, 490	CR70
Temperature Probe	TP-28, TP-30	-
AC Leakage Tester	1655	PR57
Logic Probe	DP21, DP51	-
Logic Pulser	DP31, DP101	-
Inductance Analyzer	875A	LC76, LC101, LC102
Flyback Yoke Tester	875A	VA62A, LC76, LC101, LC102
TV Stereo Power Monitor	-	SR68
Field Strength Meter	-	FS73, FS74
Transistor Tester	510, 520B, 530	TF46
Video Analyzer	-	VA62A
Modulator/Converter	1201	-

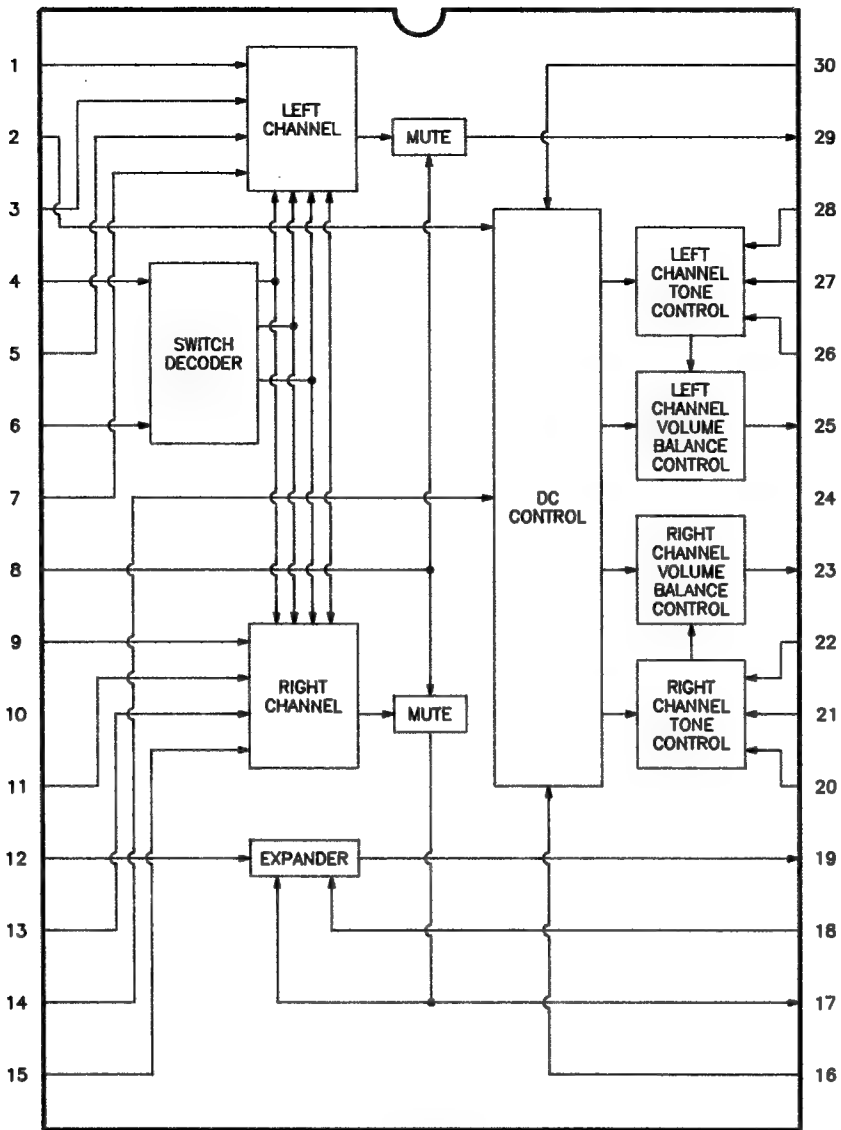
IC FUNCTIONS



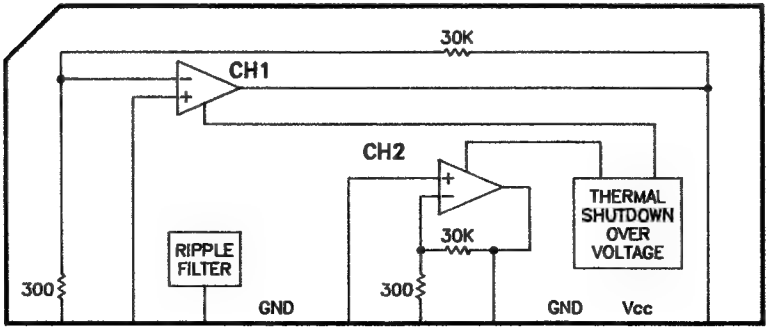
uPC1870CA
IC350



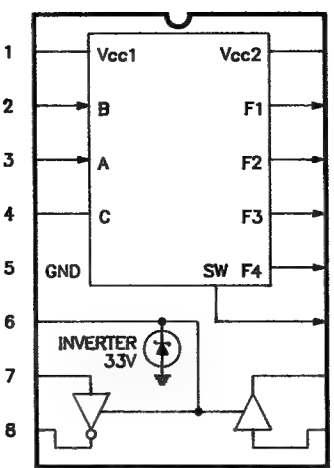
LA7222
IC202



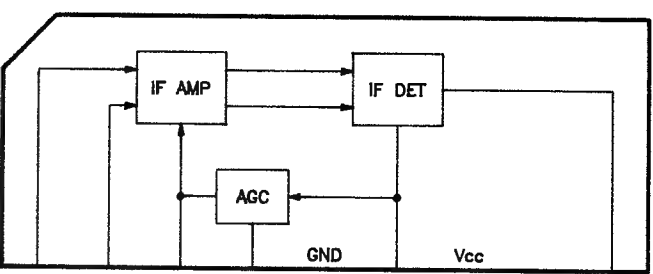
LA7953
IC3A1



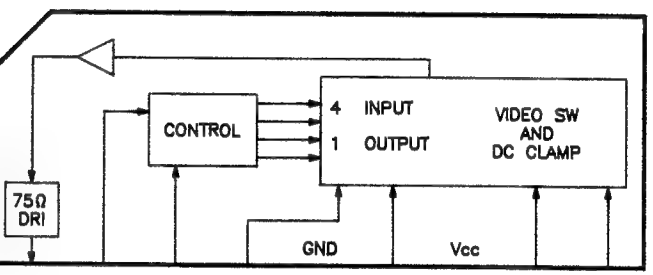
LA4270
IC3A2



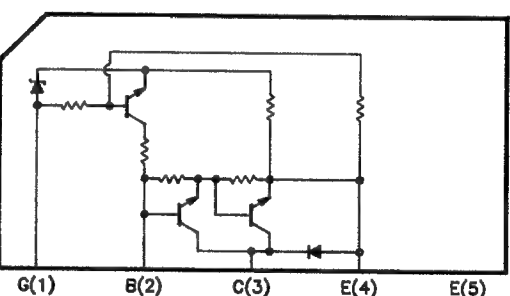
LA7911
IC771



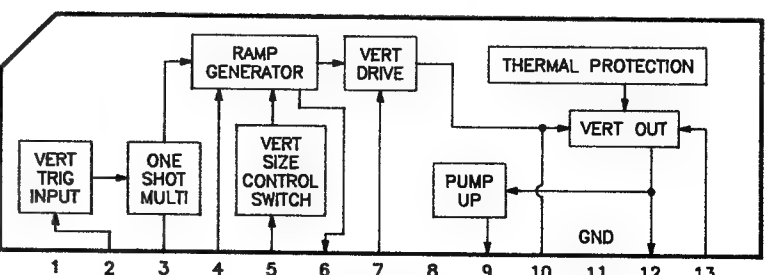
LA7510
IC330



LA7952
IC2A0

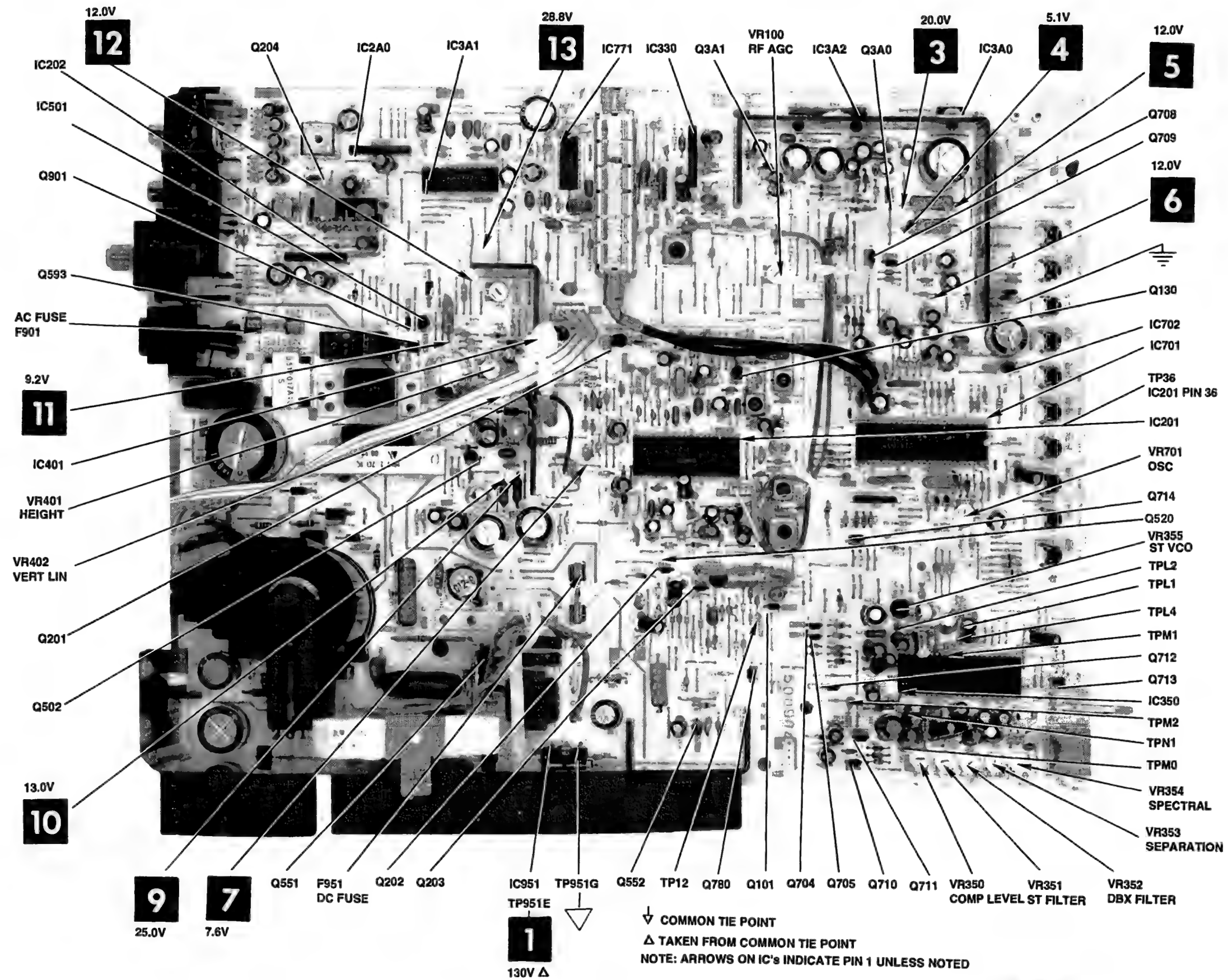


STRD3030
IC951



LA7838
IC401

MAIN BOARD



A HOWARD W. SAMS CIRCUITRACE PHOTO

MISCELLANEOUS

Item No.	Description	Mfr. Part No.	Notes
BP330	Filter	296P067010	Ceramic
BP601	Chroma-BP	349P159040	-
CF100	Filter	296P024020	Ceramic
CF501	Resonator	299P051030	-
DL201	Delay Line	337P096060	-
DL202	Delay Line	337P110020	-
# F901	Fuse	283D060030	-
	6.3A 125VAC	-	-
# F951	Fuse	283D076010	-
	1A 125VAC	-	-
# K901	Relay	287P049020	Power
# L554	Ferrite Bead	411P001010	-
# L901	Line Filter	351P017010	-
# L991	Degaussing	409B101010	-
# P1	Cord AC	242C499040	-
S701	Switch	432P066010	Power
S702	Switch	432P066010	Volume+
S703	Switch	432P066010	Volume -
S704	Switch	432P066010	Channel+
S705	Switch	432P066010	Channel-
S706	Switch	432P066010	Input
S707	Switch	432P066010	Adjust+
S708	Switch	432P066010	Adjust-
S709	Switch	432P066010	Video
S710	Switch	432P066010	Audio
SF131	Filter	296P065020	SAW
SF330	Filter	296P066010	SAW
# V1	CRT	A51JFC80X	-
X601	Crystal	285P015010	Resonator
X701	Crystal	285P029030	Resonator
	Board	930C294070(1)	CRT
	Board	240A64202(1)	Main
	Board	440A006010(1)	Terminal
	Board	939P296040	Remote Control Preamp
	Board	939P317050	Remote Control
	Socket	449C081080	For CRT
	U/V Tuner	295P081010(1)	-
	Wedge	641D758010	-

For SAFETY use only equivalent replacement part.
(1) Contact PTS Electronics Corporation for replacement; order by manufacturer's part number.

PARTS LIST

SEMICONDUCTORS

(Select replacement for best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
D201	RD7.5FB2	264P485060	NTE138A	ECG138A	SK7V5
	EQA02-07CD	-	NTE5014A	ECG5014A	SK6A8
D202	RD8.2FB3	264P486020	NTE5072A	ECG5072A	SK8V2
D203	1S2471	264P045040	NTE519	ECG519	SK3100
D205, 6	1S2471	264P045040	NTE519	ECG519	SK3100
D208	1S2471	264P045040	NTE519	ECG519	SK3100
D209	RD5.6FB1	264P484020	NTE136A	ECG136A	SK5V6
	EQA02-05F	-	NTE5010A	ECG5010A	SK5A1
D210	1S2471	264P045040	NTE519	ECG519	SK3100
D211 - D213	1S2471	264P045040	NTE519	ECG519	SK3100
D401	EQA02-05C	264P460060	NTE5010A	ECG5010A	SK5A1
D410	RD10FB1	264P486080	-	-	-
D451	S5500D	264P285010	NTE116	ECG116	SK3313
	EM1Z	264P285010	NTE552	ECG552	SK9000
D490	1S2471	264P045040	NTE519	ECG519	SK3100
D501, 2	1S2471	264P045040	NTE519	ECG519	SK3100
# D503	EQA02-33A	264P471010	NTE5036A	ECG5036A	SK33A
	RD7.5EB1	264PA71010	NTE5014A	ECG5014A	SK6A8
D506	1S2471	264P045040	NTE519	ECG519	SK3100
D552	TVR1G	264P295020	NTE552	ECG552	SK9000
	ES1	264P295020	NTE552	ECG552	SK9000
D553	ES1	264P295020	NTE552	ECG552	SK9000
	TVR1G	264P295020	NTE552	ECG552	SK9000
D561	RU3B	264P102020	NTE552	ECG552	SK3318A
# D582	S5500D	264P285010	NTE116	ECG116	SK3313
	EM1Z	264P285010	NTE552	ECG552	SK9000
D593, 4	S5500D	264P285010	NTE116	ECG116	SK3313
	EM1Z	264P285010	NTE552	ECG552	SK9000
D599	1S2471	264P045040	NTE519	ECG519	SK3100
D601	RD7.5FB2	264P485060	NTE138A	ECG138A	SK7V5
	EQA02-07CD	-	NTE5014A	ECG5014A	SK6A8
D651	HZ3BLL	-	NTE5004A	ECG5004A	SK3A0
D710 - D713	1S2471	264P045040	NTE519	ECG519	SK3100
D715 - D717	1S2471	264P045040	NTE519	ECG519	SK3100
D719, 20	1S2471	264P045040	NTE519	ECG519	SK3100
D721	LN38GPL	264P550010	NTE3010	ECG3010	SK2010A
D722	HZ5B2	264P341090	NTE5009A	ECG5009A	SK4A7
D723	1S2471	264P045040	NTE519	ECG519	SK3100
D730	1S2471	264P045040	NTE519	ECG519	SK3100
D750, 1	1S2471	264P045040	NTE519	ECG519	SK3100
D771, 2	1S2471	264P045040	NTE519	ECG519	SK3100
D773	EQA02-05C	264P460060	NTE5010A	ECG5010A	SK5A1
D780	EQA02-05A	264P460040	NTE5009A	ECG5009A	SK4A7
D901	S5500D	264P285010	NTE116	ECG116	SK3313
	EM1Z	264P285010	NTE552	ECG552	SK9000
# D953	RBV-408	-	NTE5311	ECG5311	SK5031
	RBV-40C	264P512020	NTE5311	ECG5311	SK5031
D2000	1S2471	264P045040	NTE519	ECG519	SK3100
D2010	RD7.5FB1	264P485050	-	-	-
	EQA02-07CD	-	NTE5014A	ECG5014A	SK6A8

For SAFETY use only equivalent replacement part.

SEMICONDUCTORS continued

(Select replacement for best results.)

Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
D2011	1S2471	264P045040	NTE519	ECG519	SK3100
D3A0	RBV-401	264P512030	NTE5309	ECG5309	SK5028
D3A2, 3	1S2471	264P045040	NTE519	ECG519	SK3100
D3F0, 1	1S2471	264P045040	NTE519	ECG519	SK3100
# IC201	LA7655N	272P238020	NTE1863	ECG1863	-
	LA7655	-	NTE1863	ECG1863	-
IC202	LA7222	272P184010	-	-	-
IC330	LA7510	272P188010	-	-	-
IC350	UPC1870CA-001	-	-	-	-
	UPC1870CA-001-L	272P187010	-	-	-
IC401	LA7837	272P239030	NTE1855	ECG1855	SK10085
IC501	78L09K	-	-	-	-
	NJM78L09K	266P923010	-	-	SK3962
IC701	M34350N6-567SP	263P228050	-	-	-
IC702	PST520E	266P130030	-	-	-
IC771	LA7911	266P197010	-	-	-
# IC951	STR-D3030	267P925010	-	-	-
IC2A0	LA7952	272P138010	-	-	-
IC3A0	UPC7812H	266P934020	NTE966	ECG966	SK3592
	UPC7812	-	NTE966	ECG966	SK3592
IC3A1	LA7953	272P139010	-	-	-
IC3A2	LA4270	272P140010	NTE1798	ECG1798	SK9745
Q101	2SC2058S	-	NTE85	ECG85	SK9229
	2SC2058S-P	260P654020	NTE85	ECG85	SK9229
Q130	2SC1906	260P356010	NTE107	ECG107	SK3293
Q201	2SA673D	-	NTE290A	ECG290A	SK9132
	2SA950-Y	260P255040	NTE290A	ECG290A	SK3841
Q202	2SA933S	-	NTE290A	ECG290A	SK9132
	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
	2SA1115-E	-	NTE290A	ECG290A	SK9138
Q203, 4	2SA1115-F	-	NTE290A	ECG290A	SK9138
	2SA933S	-	NTE290A	ECG290A	SK9132
	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
	2SA1115-E	-	NTE290A	ECG290A	SK9138
	2SA1115-F	-	NTE290A	ECG290A	SK9138
Q502	2SA1320	-	NTE288*	ECG288*	SK3434*
	2SA1321	260P469010	NTE288*	ECG288*	SK3434*
# Q520	UN4112	260P603010	NTE2358	ECG2358	SK9741
	DTA124ES	260P603010	NTE2358	ECG2358	SK9741
# Q551	2SD1878	260P607010	NTE2331	ECG2331	SK10088
Q552	2SC2655Y	-	NTE293	ECG293	SK3849
	2SC2655-Y	260P325030	NTE293	ECG293	SK3849
Q593	2SA933S	-	NTE290A	ECG290A	SK9132
	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
	2SA1115-E	-	NTE290A	ECG290A	SK9138
	2SA1115-F	-	NTE290A	ECG290A	SK9138
Q651 - Q653	2SC1740S	260P559030	NTE85	ECG85	SK3122
	2SC3789-C	260P571010	NTE157	ECG157	SK3747
	2SC3789-D	260P571010	NTE157	ECG157	SK3747
	2SC3789-E	-	NTE157	ECG157	SK3747

For SAFETY use only equivalent replacement part.

* Lead configuration may vary from original.


mitsubishi

MODEL CS-2010R

RESISTORS			
Item No.	Rating	Mfr. Part No.	NTE Replacement
R102	130K 1% Mtl Flm	-	-
R106	750 1% Cbn Flm	-	-
# R111	10 5% 1/4W Cbn Flm	-	QW010
R214	39K 1% Mtl Flm	-	-
R217	13K 1% 1/4W Cbn Flm	-	-
R228	150K 1% 1/4W Cbn Flm	-	-
R233	180K 1% 1/4W Cbn Flm	-	-
R358	30K 1% 1/4W Cbn Flm	-	-
R3A0	100 5% 3W Mtl Flm	-	3W101
# R3C4	2.2 5% 1/4W Cbn Flm	103P418040	QW2D2
# R3C5	2.2 5% 1/4W Cbn Flm	103P418040	QW2D2
R3F1	5600 1% 1/4W Cbn Flm	-	-
R3F2	2000 1% 1/4W Cbn Flm	-	-
# R455	2.2 5% 1/4W Cbn Flm	103P418040	QW2D2
R504	22K 1% 1/4W Cbn Flm	-	-
R506	10K 1% Mtl Flm	-	-
# R507	18K 1% 1/4W Mtl Flm	-	-
# R508	39K 1% 1/4W Mtl Flm	103P466030	-
# R510	3300 1% 1/4W Mtl Flm	103P463070	-
# R515	10 5% 1/2W Fusible	103P390010	-
# R516	10 5% 1/4W Cbn Flm	103P410010	QW010
# R517	10 5% 1/4W Cbn Flm	103P410010	QW010
# R520	3300 1% 1/4W Cbn Flm	103P463070	-
R532	51K 1% 1/4W Cbn Flm	-	-
# R551	270 5% 1/2W Mtl Flm	109D027010	HW127
R552	150 5% 3W Mtl Flm	-	3W151
# R555	3.3 10% 5W WW	109D055060	5W3D3
# R556	33K 5% 1/4W Cbn Flm	103P414030	QW333
# R557	39K 5% 1/4W Cbn Flm	103P414040	QW339
# R558	1.2 5% 1/4W Cbn Flm	103P338010	QW1D2
# R560	1.2 5% 1/4W Cbn Flm	103P338010	QW1D2
# R561	1.2 5% 1/4W Cbn Flm	103P338010	QW1D2
# R585	1.2 5% 1/4W Cbn Flm	103P338010	QW1D2
# R590	470 5% 3W Mtl Flm	103C192010	3W147
# R594	3300 5% 1/4W Cbn Flm	103P423010	QW233
# R595	18K 5% 1/4W Cbn Flm	103P414000	QW318
# R598	2200 5% 1/4W Cbn Flm	103P412090	QW222
R607	39K 1% 1/4W Cbn Flm	-	-
R613	22K 1% 1/4W Cbn Flm	-	-
R651	12K 5% 3W Mtl Flm	-	3W312
R652	12K 5% 3W Mtl Flm	-	3W312
R653	12K 5% 3W Mtl Flm	-	3W312
# R664	.33 5% 2W Fusible	-	-
# For SAFETY use only equivalent replacement part.			

RESISTORS continued			
Item No.	Rating	Mfr. Part No.	NTE Replacement
R702	2200 1% 1/4W Cbn Flm	-	-
R703	2200 1% 1/4W Cbn Flm	-	-
R708	12K 1% 1/4W Cbn Flm	-	-
R709	8200 1% 1/4W Cbn Flm	-	-
R710	6800 1% 1/4W Cbn Flm	-	-
R719	Resistor Network	103P543090	-
	15K x 5% x 4	-	-
R724	Resistor Network	109P054060	-
	10K x 5% x 5	-	-
R733	220 5 % 3W Mtl Flm	-	3W122
R739	56K 1% 1/4W Cbn Flm	-	-
R741	56K 1% 1/4W Cbn Flm	-	-
R786	39K 1% 1/4W Cbn Flm	-	-
R787	39K 1% 1/4W Cbn Flm	-	-
# R910	4.7M 10% 1/2W Cbn Cmp	109D036020	HW547
# R954	150 5% 20W WW	109D104010	-
# R956	820K 10% 1/2W Cbn Cmp	101P824030	HW482
# R957	2.7 10% 10W WW	109D067070	10W2D7
# R960	470K 5% 1/4W Cbn Flm	103P415070	QW447
# R961	12K 5% 1W Mtl Flm	103C173080	1W312
# R962	470 5% 1/4W Cbn Flm	103P412010	QW147
# RP901	9.6 Cold PTC	265P071040	-
# For SAFETY use only equivalent replacement part.			

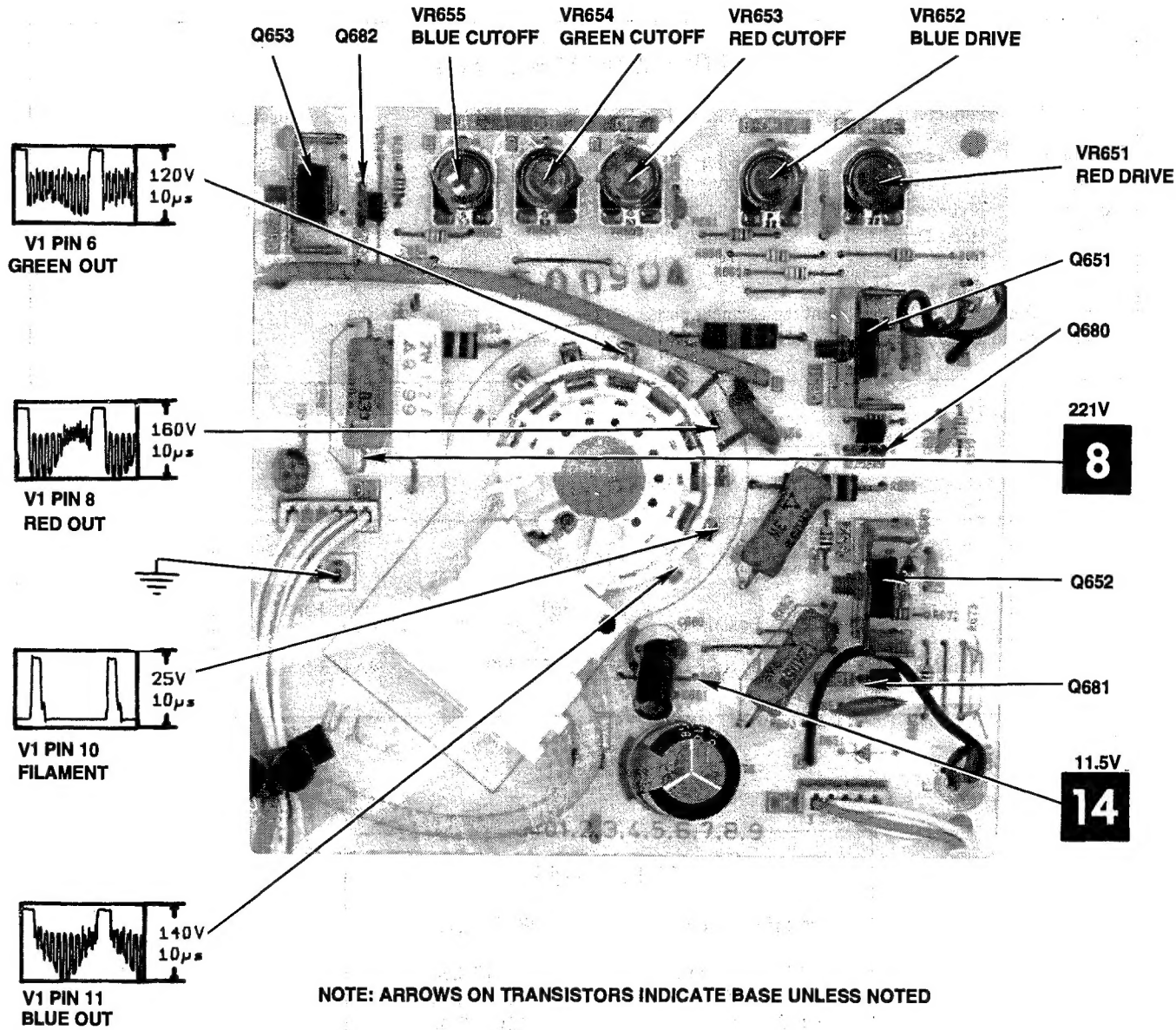
CABINET PARTS	
MODEL CS-2010R	
Item	Part No.
Back Cover Assembly	700A547010
Cabinet Front Assembly	701B220010
Door	702C832080



Created with pride by the employees of Howard W. Sams & Company.

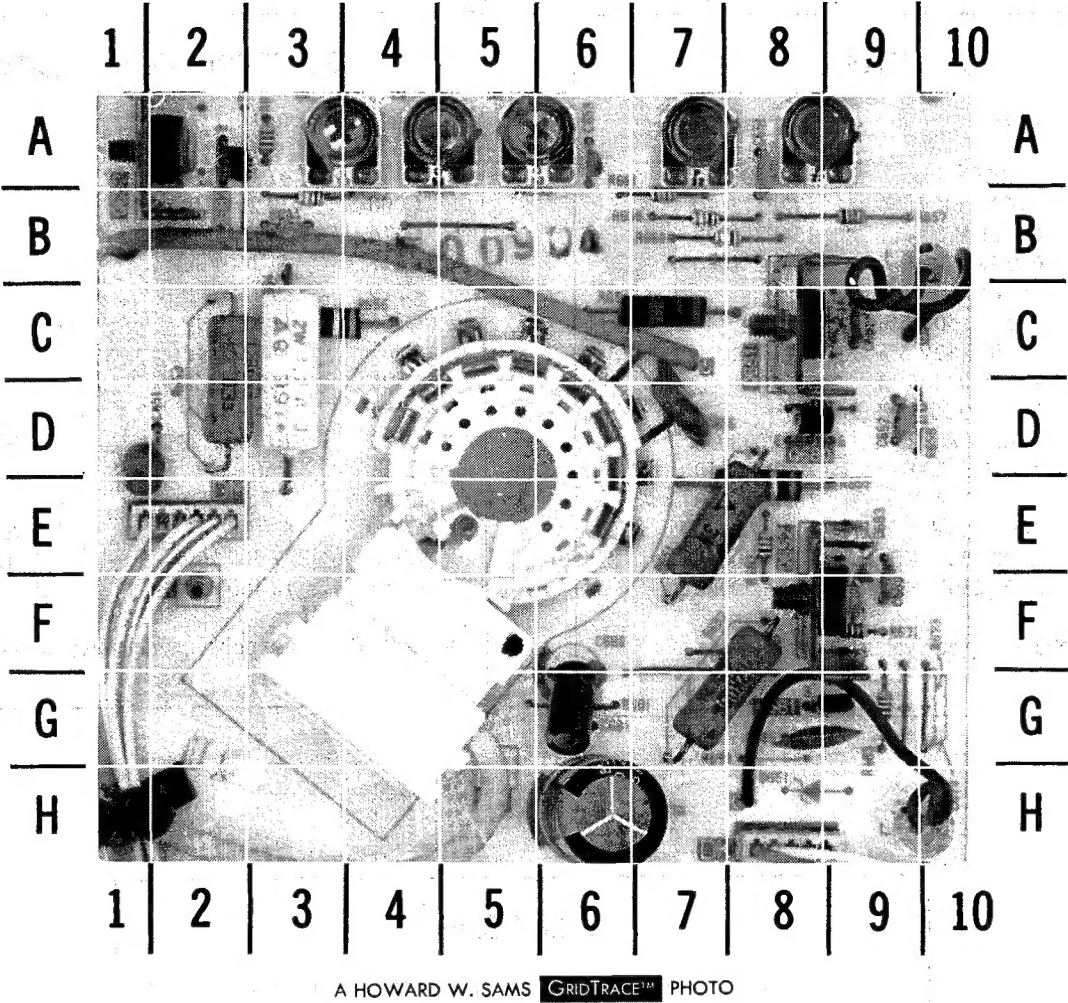
*B. Bryant, D. Curran,
G. Farrell, B. Fink,
M. Herkless, J. Kocha,
F. Malek, B. Skinner, J. Watson*

CRT BOARD



A HOWARD W. SAMS QUICK-CHECKS™ PHOTO

CRT BOARD



CRT BOARD, GRIDTRACE LOCATION GUIDE

B	B-10	C685	G-8	R651	E-7	R661	B-7	R684	A-2
C651	A-8	DK	H-8	R652	G-7	R662	B-3	SA	F-2
C652	D-9	DM	E-1	R653	C-2	R664	C-3	VR651	A-8
C653	A-6	L651	D-1	R654	C-7	R670	A-3	VR652	A-7
C656	D-7	Q651	C-8	R655	E-8	R671	D-8	VR653	A-6
C670	H-6	Q652	F-9	R656	C-3	R672	F-9	VR654	A-4
C680	G-6	Q653	A-2	R657	B-9	R680	F-8	VR655	A-3
C682	C-9	Q680	D-9	R658	B-7	R681	G-6		
C683	F-9	Q681	G-9	R659	D-10	R682	E-8		
C684	B-3	Q682	A-2	R660	B-8	R683	G-9		

PARTS LIST continued

CAPACITORS		
Item	Rating	Mfr. Part No.
# C551	.36 200V 5%	189P081010
# C552	.0091 1.6KV 5%	172P173010
# C554	680 2KV 10%	154P251060
# C570	680 2KV 10%	154P251060
C607	15 NPO 50V 5%	-
C715	22 NPO 50V 5%	-
C716	22 NPO 50V 5%	-
C717	20 N750 50V 5%	-
C718	10 N750 50V 5%	-
# C901	.1 125V AC 20%	189P033050
# C910	.01 250V 20%	189P133010
# C911	.01 250V AC	189P133010
# C954	.0022 500V	1142P014000
# C955	.0022 250V AC	189P060060
# C956	.0022 250V AC	189P060060
# For SAFETY use only equivalent replacement part.		

ELECTROLYTIC CAPACITORS		
Item	Rating	Mfr. Part No.
C105	47 10V NP	-
C200	10 25V NP	-
C214	33 16V NP	-
C217	47 160V NP	-
C219	47 16V NP	-
C366	10 25V NP	-
C367	10 25V NP	-
# C506	100 10V 20%	-
C559	1 50V NP	-
# C583	10 100V 20%	181P187010
C723	1 50V NP	-
C725	4.7 25V NP	-
# C953	820 180V	185D052040
# C957	47 200 20%	181P189080
# C960	10 160V 20%	181P188060
# For SAFETY use only equivalent replacement part.		

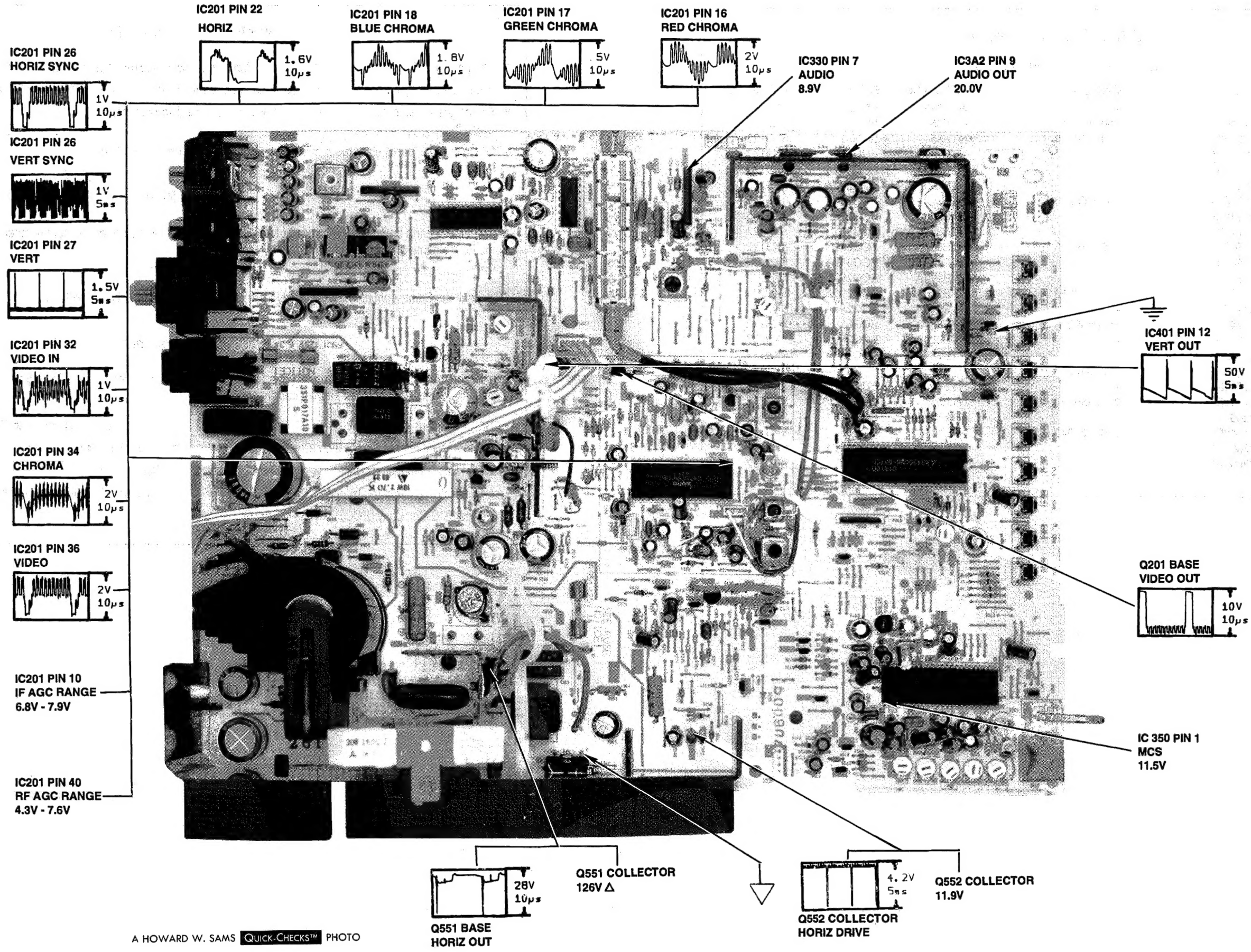
COILS & TRANSFORMERS				
Item No.	Function	Mfr. Part No.	On-Unit No.	Russell Part No.
# L491	Yoke 90°	330P160090	-	-
# L552	Horiz Linearity	333P027060	-	-
# T551	Flyback	334P159050(1)	-	FBT-322
# T552	Horiz Drive	336P012040	-	-
# T991	Power	350P439010	-	-
# For SAFETY use only equivalent replacement part.				
(1) Focus and Screen Controls are part of Horizontal Output Transformer T551.				

SPEAKERS			
Item No.	Description	Mfr. Part No.	Quam Part No.
SP391, SP392	3" Rd 8 Ohm 3W	480P400010	4A1Z8

CONTROLS			
(All wattages 1/2 watt or less, unless otherwise listed.)			
Item No.	Function	Resistance	Mfr. Part No.
VR100	RF AGC	50K	127C081010
VR201	Sub Contrast	50K	127C081010
VR350	Comp Level	5000	127C080070
VR351	Stereo Filter	10K	127C080080
VR352	DBX-Filter	50K	127C081010
VR353	Separation	50K	127C081020
VR354	Spectral	100K	127C081020
VR355	Stereo-VCO	50K	127C091010
VR401	Height	50K	127C081010
VR402	Vertical Linearity	10K	127C080080
VR651	Red Drive	200	127C020010
VR652	Blue Drive	200	127C020010
VR653	Red CutOff	5000	127C020070
VR654	Green CutOff	5000	127C020070
VR655	Blue CutOff	5000	127C020070
VR701	Oscillator	5000	127C080070

COILS (RF-IF)		
Item No.	Rating	Mfr. Part No.
L100	Video IF	323P172020
L101	Video IF 45.75MHz	323P171010
L102	10uH	325C106030
L130	Trap	320P026030
L134	.82uH	325C125000
L137	1.5uH	325C110030
L200	8.2uH	325C101020
L201	8.2uH	325C101020
L202	100uH	325C177050
L300	Sound IF	327P073020
L331	1.5uH	325C110030
L333	18uH	325C106060
L340	1.2uH	325C100020
L501	RF	321C031090
L502	RF 1uH	321C030010
L651	180uH	325C107080
L700	10uH	325C121030
L710	10uH	325C101030
T101	Video IF	323P173010

MAIN BOARD



PARTS LIST continued

SEMICONDUCTORS continued					
(Select replacement for best results.)					
Item No.	Type No.	Mfr. Part No.	NTE Part No.	ECG Part No.	TCE Part No.
Q680 - Q682	2SC2603-D	-	NTE289A	ECG289A	SK9137
	2SC1740S-Q	260P559010	NTE85	ECG85	SK3122
Q702, 4, 5	2SC1740S	260P559030	NTE85	ECG85	SK3122
	2SC2603-E	-	NTE289A	ECG289A	SK9137
Q708, 9	2SC2603-F	-	NTE289A	ECG289A	SK9137
	2SA933S	-	NTE290A	ECG290A	SK9132
	2SA933S-S	260P560040	NTE290A	ECG290A	SK9132
	2SA1115-F	-	NTE290A	ECG290A	SK9138
Q710	2SC1740S	-	NTE85	ECG85	SK3122
	2SC1740S-E	260P559050	NTE85	ECG85	SK3122
Q711	2SC2603-G	-	NTE289A	ECG289A	SK9137
	2SA933S	-	NTE290A	ECG290A	SK9132
	2SA933S-Q	260P560050	NTE290A	ECG290A	SK9132
	2SA1115	-	NTE290A	ECG290A	SK9138
Q712 - Q714	2SC1740S	260P559030	NTE85	ECG85	SK3122
	2SC2603-E	-	NTE289A	ECG289A	SK9137
	2SC2603-F	-	NTE289A	ECG289A	SK9137
	DTC124ES	260P632010	NTE2357	ECG2357	SK9742
Q780	2SC1740S	-	NTE85	ECG85	SK3122
Q901	2SC1740S-E	260P559050	NTE85	ECG85	SK3122
	2SC2603-G	-	NTE289A	ECG289A	SK9137
Q3A0, 1	2SC1740S	260P560040	NTE85	ECG85	SK3122
	2SC2603-E	-	NTE289A	ECG289A	SK9137
	2SC2603-F	-	NTE289A	ECG289A	SK9137

Important Parts Information

- The parts listed here are those not usually available from a well-stocked supply cabinet or bin.
- Where items may be replaced with equivalent parts, several alternates are shown from participating vendors.
- On the parts lists, safety items are marked with a # to remind you that only exact replacements are recommended for these items.
- When ordering parts, state the model number, part number, and description.

Obtaining Parts

Many of these parts are available from your local Sams authorized distributor or the manufacturer of the equipment. Call Sams for the name of your nearest distributor:

800-428-7267

Or consult the Sams *Annual Index* for the address of the original equipment manufacturer.

Participating Vendors

Information on test equipment and replacement parts is listed in these pages for the following participating vendors. Consult the Sams *Annual Index* for their current address.

- | | |
|--|--|
| ▪ B&K Precision | ▪ PTS Electronics Corporation (PTS) |
| ▪ Custom Components Corporation (Chek-A-Color) | ▪ Quam-Nichols Co. (Quam) |
| ▪ EVG / Russell Industries, Inc. | ▪ Sencore, Inc. |
| ▪ NTE Electronics, Inc. (NTE) | ▪ Thomson Consumer Electronics, Inc. (SK, TCE) |
| ▪ Philips ECG Company (ECG) | |